Trains

35¢

The Magazine About Railroads

October, 1947

BEGINNING WITH THE NOVEMBER ISSUE!

Trains

WILL BE BIGGER AND BETTER THAN EVER BEFORE

Shown here are the comparative sizes of the old and the new TRAINS magazines. The old measures 6⅞" x 10¼" . . . the new will measure 8¼" x 11¼".

For the past six months we have been trying an unusually large number of new ideas in TRAINS. During this period we published photographs on a high-gloss paper known as Kromekote, just like the one on page 12 of this issue. We tried devoting one issue of TRAINS entirely to a single railroad, an idea which proved particularly popular. We have also added more photographs, and changed to a medium-sized type face so that more wordage can be put into our stories without making them hard to read. We tried the three-column makeup which gives shorter lines and makes reading easier. These are just some of the many ideas we have tried. Some were definitely not good; others have met with great popularity among our readers. Reader mail has been carefully read and weighted. All of the experimentation, however, has had one end in view: the creation of a new postwar TRAINS.

Beginning next month we are making a major change — a new larger page size: 8¼" x 11¼". The new TRAINS will incorporate all the best ideas of the old magazine along with some new features which we believe are sure to make it a more useful and interesting magazine for you. We have also increased the size of our editorial staff so we can provide more maps, better illustrations, new departments, and more complete articles.

The Publishers

KALMBACH PUBLISHING CO., MILWAUKEE 3, WIS.

Trains

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"In terms of national transport economics and despite subsidized competition from other carriers, our railroads will continue to be our great freight movers throughout the foreseeable future. Whether they operate as profitable businesses is another matter — a matter that should be of primary concern to everyone who believes in the free enterprise system — to everyone who has a stake in our economic future."—From the booklet "Railroads," published by Merrill Lynch, Pierce, Fenner & Beane.

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October 1947

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Mr. Young and Western Freight

Robert Young is at it again. The C&O board chairman has been publicly needling railroad management for more than a year. He has purchased advertising space in newspapers and magazines (including TRAINS; see pages 14 and 15) for a variety of charges which would not have been surprising coming from Henry Wallace or the newspaper *PM*, but were most unusual when made by a railroad official. The trouble is, as advertising men could have foretold, the Young charges are giving a black eye to all railroads, including his own C&O, because the public does not stop to discriminate.

Young's basic charge this time (page 15) is that principal western freight routes do not run trains as fast as possible, but slow all trains down to the time of the slowest routes. O. D. T. Director J. Monroe Johnson suggested Young had better look to his own C&O first, for its average freight train speed is 15.3 m. p. h., while western roads have averages like these: Santa Fe, 19.8; Union Pacific, 19.9; Southern Pacific, 15.7. To forestall criticism for comparing a coal-hauling road with roads of different traffic characteristics, he added that Norfolk & Western's average is 15.9.

This was all statistical, and statistics are often open to gross misinterpretation. But railroad men have realized all along that Young's statistics are his most vulnerable point. This was brought home last June 4 when Young charged in Los Angeles that Union Pacific could run its streamliners faster than the Santa Fe because it is 416 miles shorter from Chicago. The truth is the UP route is 72 miles longer. Young simply forgot that UP mileage starts at Omaha and that 488 miles of C&NW trackage is also used!

Ralph Budd, president of the Burlington, skipped statistics and got to the heart of the question in plain talk: "The railroad with the shortest line and the lowest grades fixes the standard of service that all other lines must try to meet in order to compete. The short-mileage road decides at what speeds trains must be operated to produce the greatest efficiency and economy." This was closest to the truth, according to freight men who are on the inside of schedule making.

Actually there are some 2200 different freight routes or combinations of routes between midwestern gateways such as Chicago and St. Louis and the Pacific Coast. Only a few compete on the fastest schedules of seventh morning delivery for merchandise and sixth morning delivery of perishables. Schedules of competitive routes are naturally close if not identical because freight leaves in the evening after closing hours of freight houses and arrives for morning delivery. A schedule change is useless unless it can save a full 24 hours.

Out of the competitive routes it is hard to find the 450-mile difference in length charged by Mr. Young. Checking the common passenger lines by the *Official Guide*, one finds the mileages amazingly similar in spite of wide divergencies along the way. For instance:

Chicago-Los Angeles:	
Santa Fe	2227 miles
Golden State Route	2273 miles
Union Pacific	2299 miles
Chicago-San Francisco:	
UP-SP-C&NW	2263 miles
D&RGW-WP-CB&Q	2532 miles
Chicago-Portland:	
GN Spokane-SP&S	2241 miles
Union Pacific	2272 miles
Chicago-Seattle:	
Milwaukee	2189 miles
Great Northern	2191 miles
Northern Pacific	2331 miles

Freight routes are somewhat different. They often start and end at odd points. Roads which do not compete for passenger business do compete for freight. But still the differences are not so great as they look on the map. The UP is the middle link in any short route from northern California to Chicago, and using SP from Roseville to Ogden and the Milwaukee Road from Omaha to Bensonville Yard west of Chicago gives the shortest mileage of 2126. This compares with the longest competitive mileage of 2544 via Western Pacific from Sacramento to Salt Lake City, Rio Grande to Pueblo, MoPac to Kansas City, Wabash to Chicago. The difference is 418 miles.

From southern California to Chicago, the short-route Santa Fe, 2140 miles from San Bernardino, compares with the long-route UP from Colton to Salt Lake City, thence to Rio Grande, MoPac and Wabash route mentioned above, 2469 miles, a difference of 329.

In an attempt to pin down the eight routes and 450-mile difference mentioned in the ad, TRAINS asked the C&O for details. Nine routes were listed in the reply, most of them unusual combinations. The longest was given as Rock Island, Chicago to Denver, Rio Grande to Salt Lake City, Union Pacific to Los Angeles. It was listed as 2756 miles, which would be 529 miles longer than the Santa Fe. But the actual mileage on this route adds up to 2438, only 211 miles more than Santa Fe.

A top executive on one of the long routes told TRAINS, "We have to cut our tonnage and run like hell to meet the time of the UP and Santa Fe, but it's better than not getting any of the business. I wish that guy Young had to compete with the UP."

As A. H. Gass, director of O. D. T.'s Railway Transportation Department, said, "Transportation is not as simple as the Rip Van Winkle advertisements indicate." It all simmers down to whether the pace-setting UP and Santa Fe deliberately run their freight trains slower than they could. Both roads are capably managed, have reputations as among the most progressive in the country, and have spent millions in recent years to improve their lines. It seems most improbable that they are not setting a mighty stiff pace for their competitors.

As for Mr. Young, everyone in the railroad business wonders why he does what he does in the way he does. In an industry as old and complacent as the railroads, a critic like Mr. Young can do a lot of good. But making people angry is often the surest way of keeping them set in their ways. Young has been most effective when he criticized by example, as by eliminating tipping on C&O diners, or when he carried his ideas through the regular authorities, as in getting the I. C. C. to require competitive bidding on railroad bonds. More of the same would help.

Observation-lounge car on the famous PANAMA LIMITED

This luxurious Illinois Central train is powered by a General Motors Diesel locomotive on its daily 16½-hour run, 921 miles each way between Chicago and New Orleans. Also powered by GM Diesels are the I.C.'s other famous trains—City of New Orleans, City of Miami, Green Diamond, Daylight, Night Diamond, Land O'Corn and Miss Lou.

"Ninety five? I thought we were doing about sixty!"

Unless you count the mileposts as they flash by, you can hardly believe the distance the Panama Limited is covering with a General Motors Diesel locomotive up at the head of the train.

The flow of power is so smooth that you get from here to there almost before you know it, at a hundred miles an hour a lot of the time.

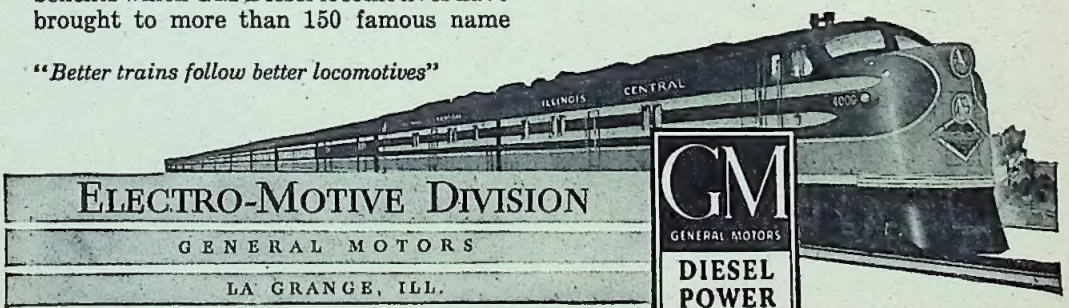
The Panama Limited is just one example of how GM Diesel locomotives have stepped up schedules on American railroads.

This stepping up of schedules is one of the benefits which GM Diesel locomotives have brought to more than 150 famous name trains on more than a score of railroads — and that is just about all of the Diesel-powered crack trains in the United States. And in addition, these GM Diesel locomotives are so reliable that some railroads report, as high as 97% "on time" arrivals.

No wonder more and more of the crack trains of the nation are being powered by these General Motors locomotives.

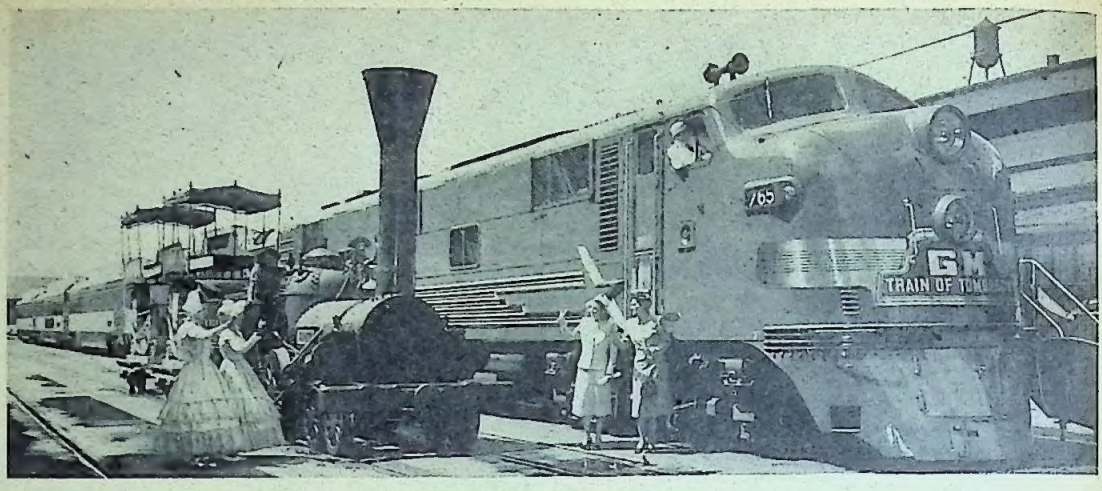
In the thirteen years since they first made their bow, they have helped the railroads reduce operating costs — and increased passenger traffic, because they made train travel such a pleasure.

"Better trains follow better locomotives"



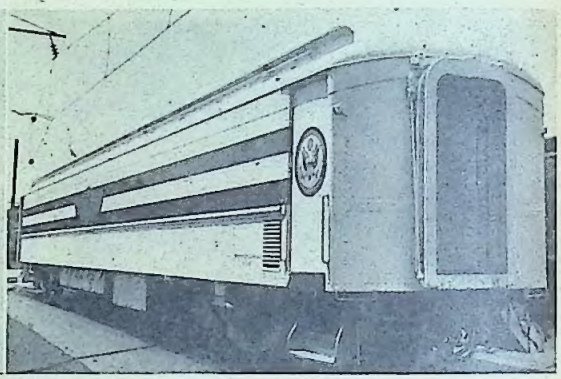
ELECTRO-MOTIVE DIVISION
GENERAL MOTORS
LA GRANGE, ILL.

GM
GENERAL MOTORS
DIESEL POWER



A train of yesterday shared honors with the General Motors Train of Tomorrow at Baltimore. The Baltimore & Ohio took the Lafayette out of its historical equipment collection, steamed it up and ran it alongside the GM train at Camden station.

Chesapeake & Ohio plans a daylight cruise train for next-year operation. Chairman R. R. Young points out some features to an ABC commentator during a recent broadcast.



This is one of the special exhibit cars of the Freedom Train, which is carrying historic government documents for public display in many cities and towns of all 48 states.

Patrons of Baltimore & Ohio's Singerly local have dubbed it the "Little Royal Blue" because its color scheme is similar to that of the Royal Blue: blue with gray trim. This electric-drive train now has a diesel motor; it formerly used gasoline.

Odds and Ends

The B&O - Western Maryland circle trip September 7 was one of the largest fan trips ever held. Ticket sales were stopped after the train's capacity of 800 was reached. . . . Rock Island dropped reservations on the Peoria and Des Moines *Rockets* when their capacity was increased, but by popular request the reservation system has been reinstated. Patrons prefer to secure accommodations in advance.

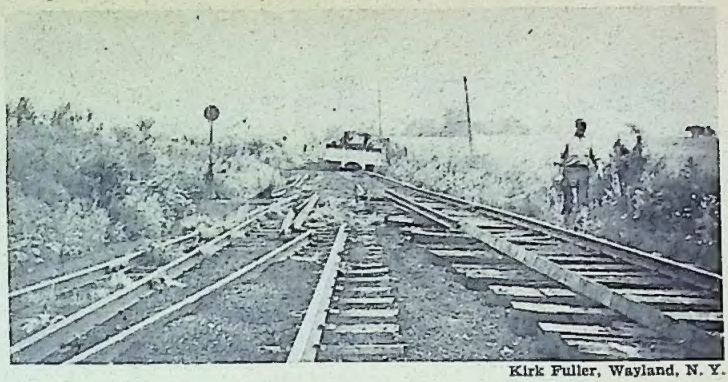
Swarms of flies delayed traffic on the Pennsylvania Railroad between Port Deposit, Md., and Harrisburg, Pa. Millions of the insects clogged overhead power lines and short-circuited motors of three electric freight locomotives. Steam engines came to the rescue. . . . Norfolk Southern wants to discontinue railbus service between Norfolk and Virginia Beach and turn the business over to buses of the Norfolk Southern Bus Corp.

A new railroad has been chartered in West Virginia: the Peters Creek & Muddlety Railroad. It will extend from a junction with the Strouds Creek & Muddlety Railroad up Muddlety Creek to Lockwood and a junction with the New York Central. The PC&M will tap a newly developed coal seam.

UP-SP-C&NW's *City of San Francisco* is now running daily instead of three times a week. . . . New York Central offered Purdue University a free train for a traveling exhibit of latest argicultural laborsaving devices, and carried the train to 43 towns on its lines. Monon also operated it through 13 towns. Registrations showed 66,415 rural people benefited from the rolling schoolhouse.

New freight schedules on the Norfolk & Western have resulted in faster freight deliveries from Columbus and Cincinnati to Richmond and points south of Petersburg, Va. In some cases 24 hours' time is saved. . . . Missouri Pacific will spend $5.2 million for 115- and 132-pound rail in 1948. . . . Missouri-Kansas-Texas will install 40 more miles of block signaling to take its total block-signaled mileage to 1051.

Pacific Great Eastern will soon extend its rails some 270 miles northward into the Peace River country, Douglass Welch reports in the Seattle *Post Intelligencer*. It is not yet clear who will finance the project — Canadian National and Canadian Pacific in combination, or the present owner, the British Columbia government. The Squamish-Quesnel line will have to be rehabilitated, Welch says.



Kirk Fuller, Wayland, N. Y.

This was a class 1 railroad, the Pittsburg, Shawmut & Northern, now abandoned.

Equipment Notes

Southern Railway will spend $½ million in the next six months to modernize present equipment. . . . Santa Fe has placed in service 12 new Pullman-Standard duplex-roomette cars. . . . Seaboard Air line's *Silver Comet* and *Silver Meteor* are sporting new streamlined stainless-steel tavern-lounge observation cars which feature wide glareproof windows, fluorescent lighting, radio, a public address system, and a traveling library.

Canadian Pacific placed orders in August for 1675 freight cars. This brings the year's total bill for new equipment (including locomotives) to more than $47 million. . . . The Long Island Railroad will spend $2½ million in modernizing present rolling stock. . . . Frisco will buy 1300 new freight cars, and B&O will get 2000 50-ton open-top steel hopper cars. . . . NYC has just received from Budd Co. its first postwar two-car dining unit. One car is all dining room, the other kitchen and lounge.

American Car & Foundry will build, for Chicago & Eastern Illinois, 200 50-ton welded-steel box cars; for Tennessee Central, 100 50-ton hopper cars; for Gulf, Mobile & Ohio, 50 70-ton 29'-3" steel covered hopper cars. . . . Union Pacific will spend $6 million for 1600 more box cars. This takes UP's postwar equipment bill to more than $100 million. . . . Monon has ordered 50 drop-end mill-type gondolas of 70-ton capacity to handle long and heavy steel products and machinery, and will also use them to handle shipments of stone from the Bedford-Bloomington district. Monon is planning to buy 300 all-steel box cars, 100 70-ton hopper cars, 50 flat cars and 25 stock cars.

Chesapeake & Ohio anticipates more coal traffic and has ordered another 1000 70-ton hopper cars to handle it. The road is now one of the largest originators of bituminous coal. It serves 292 mines and is extending its lines to new coal fields in Kentucky and West Virginia. . . . Pennsylvania Railroad is now receiving delivery from ACF on 21 new overnight reclining-seat coaches destined for its important east-west trains. Seventy similar coaches which the railroad built in its own Altoona Works are already in service on the *Trail Blazer*, *Jeffersonian* and *Liberty Limited*.

UP Eliminates Tourist Cars

Union Pacific has eliminated tourist sleepers on all its east-west trains and will take them off other trains as rapidly as possible. President G. F. Ashby described tourist sleepers as "an outgrowth of the old emigrant car" and said he is eliminating them "so that Union Pacific can offer the most modern equipment to the traveling public." He made no comment on the fact that tourist accommodations are about one-third cheaper than first-class accommodations.

Pullman Rates Up

Pullman berth rates were due to be raised October 1 by special permission of the I. C. C. The increases range from 1 to 48.9 per cent over the old rates. Biggest increase is for short overnight trips where the rate ranged from $2.35

to $2.95. Under the new rates the minimum charge will be $3.50. Rates up to $17.35 are increased on a descending scale. Rates of $17.70 or more are unaffected.

Non-Op. Wage Increase Nullifies Rate Hike

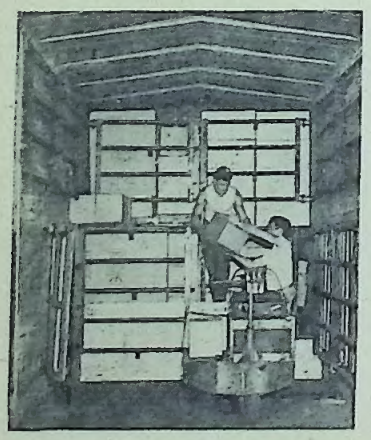
The dog is still chasing its own tail, trying to make ends meet. Nonoperating railway employees were awarded a wage increase of 15½ cents an hour effective as of September 1, adding an estimated $440 million annually to the pay rolls of the railroads. In the first six months of 1947 the class 1 railroads of the country made an estimated net income of $204 million, according to a comment of the Interstate Commerce Commission. On that basis, the new wage increase will more than wipe out the railroads' net income unless they are granted new rate increases to offset the additional pay roll load. The increases have already been asked for.

The Public Looks at Railroads

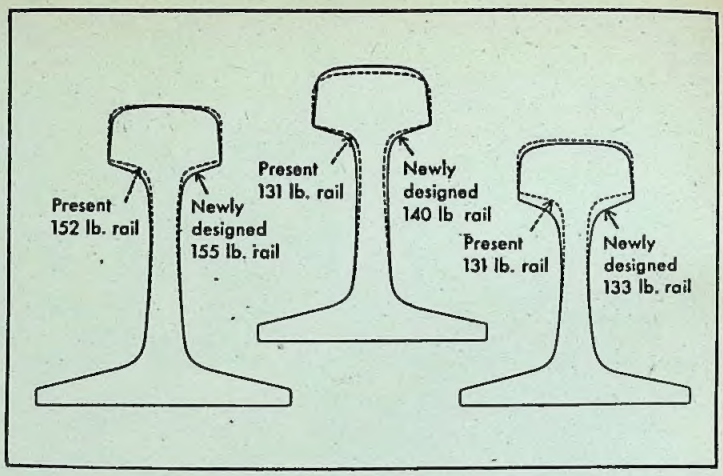
What could the railroads do that would make you want to use trains more?

That is one of the questions which was asked in a survey by Opinion Research Corporation. Some replies to this question were as follows:

Improve their equipment	26%
Lower fares	14
Give better service	11
Keep trains cleaner	10
Run faster service	6
Provide better schedules	5
Provide more safety precautions	3
Provide cheaper food, more diners	3
Run more excursions	1



Damage claims are virtually eliminated by steel gates which the Pennsylvania Railroad is installing in merchandise cars. They hold freight firmly in place.


Present 152 lb. rail
Newly designed 155 lb. rail
Present 131 lb. rail
Newly designed 140 lb rail
Present 131 lb. rail
Newly designed 133 lb. rail

These cross sections show the three new rail designs adopted by the Pennsylvania Railroad compared with the older sections. Solid lines are the new designs.

GM&O and Frisco May Merge

Officers of the Frisco and the Gulf, Mobile & Ohio railroads are studying the possible benefits to be gained through consolidation of the two properties, it is announced by Clark Hungerford and I. B. Tigrett, presidents of the roads. Consolidation of the lines would result in a 7200-mile system.

Frisco Adds More C. T. C.

Frisco Lines will install 71 additional miles of centralized traffic control as soon as materials can be obtained. Train dispatchers at Tulsa, Okla., will control all mainline movements from East Tulsa to Afton.

Frisco is already operating by C. T. C. between Marshfield and Dillon, Mo., and between Springfield and Monett, Mo. Installation is now under way between Marshfield and Springfield, and when this is completed, continuous C. T. C. will extend approximately 197 miles.

Rock Island Completes Iowa Line Relocation

A $15 million line relocation on the Rock Island's Golden State Route between Chicago and Kansas City was completed and placed in service August 15. The project consisted of five major relocations, four of which were completed before the war.

The last segment of the relocation is a 17-mile stretch of track between Ainsworth and Brighton, Ia., where the distance was shortened 3½ miles. In all, the relocation program involved the purchase of rights of way and the construction of 90 miles of new roadbeds, bridges and tracks, principally in eastern Iowa.

The new line is built to super-railroad standards throughout, with a ruling grade of 0.5 per cent and a maximum curvature of 1 degree. To maintain the ruling grade, some of the cuts in hilly country were cut as deep as 60 feet, and some of the fills are 50 feet high. Thirty highway bridges were built to eliminate grade crossings, in addition to 17 steel railroad bridges. These do not include the $3 million bridge across the Missouri River northeast of Kansas City, which was built in conjunction with the Milwaukee Road. This bridge provides a direct route for Rock Island passenger trains through Kansas City Union Station and eliminates the old problem of backing into the station and turning trains on a loop.

Centralized traffic control and cab signals are in use on 232 miles of the Chicago-Kansas City line. The rest is protected by automatic block signals.

Electric Railways

Pacific Electric plans to build a rail rapid transit system from the subway terminal in downtown Los Angeles to a connection with the Cahuenga Pass Freeway via the proposed Hollywood Parkway. Cost of the project would run about $20 million, and state and city aid will be sought. . . . Los Angeles Transit Lines abandoned rail

service on some lines early in August and was greeted with traffic jams caused by additional autos, trackless trolleys, and buses.

The Oakland City Planning Commission has recommended the elimination of all transbay trains which now operate over the Bay Bridge into San Francisco from Oakland, Berkeley and intermediate points. If this proves not feasible, the commission wants to eliminate all but two bridge lines. . . . Cleveland interests hope to buy the Waukesha line of the Milwaukee Electric [August TRAINS]. Interurban service between Racine and Kenosha was abandoned September 14. . . . All trolley service in Washington County, Maryland, was discontinued August 4 when car 172 of the Potomac Edison Company last ran between Hagerstown and Williamsport.

Lima Eyes Diesel Business

Lima Locomotive Works wants to go into the diesel business. With that end in view, it plans to consolidate with the General Machinery Company of Hamilton, O. If stockholders of the two companies approve the plan in special meetings October 1, the companies will pool their resources of more than $35.3 million and become the Lima-Hamilton Corp.

Neither company so far has built diesel locomotives, but General Machinery produces diesel engines. Lima's steam locomotive experience goes back to 1869. General Machinery has been experimenting with a free-piston gas generator turbine which is applicable to locomotives, ships, and stationary power plants, and it is expected that consolidation of the two companies will speed up commercial development of the turbine.

Monon Line Change

Monon has received permission from the I. C. C. to construct its new line by-passing Cedar Lake and to abandon the old line over the treacherous Paisley Trestle [page 25, July TRAINS]. The new line will extend from Armour to Lowell, Ind., and should be completed by the end of the year.

Locomotive Notes

Union Pacific has ordered 10 new road and switching engines, all diesels. . . . Frisco will buy 19 freight and switching diesels. . . . The Esquimalt & Nanaimo Railway on Vancouver Island will be completely dieselized in 1948. The E&N is owned by Canadian Pacific.

Jersey Central is naming its new freight diesels for CNJ employees killed in the war. The five employees' names so used thus far are Harry R. Vandercar, John Balasia, Raymond Soltycki, Franklin J. Lindenmuth and Valentine S. Larva. The locomotives were christened by relatives of the dead men in ceremonies in the cities where they lived.

Canadian Pacific has appropriated $11 million for the purchase of 63 steam locomotives: 15 for eastern lines and 48 for western. The western lines will get 30 dual-service Pacifics of the 1200 class, six heavy passenger Selkirks of the 5900 class (largest engines in service in the British Commonwealth), and 12 heavy freight Mikados of the 5400 class. A "Selkirk" is a Texas type: 2-10-4. . . . Richmond, Fredericksburg & Potomac will dieselize its Potomac Yard operations late next year after delivery of 10 1000-horsepower diesel road switchers. Four diesels already work in the yard. Several steam locomotives will be kept on hand for emergencies such as peak movements.

Baltimore & Ohio is still building its own Class T-3 Mountain locomotives at Montclair. The 40 T-3's now in service are numbered 5555 to 5594. Twenty more are being fitted; these and 13 ex-B&M Mountains will run the numbers into the 5600's, so the *George Emerson* experimental loco No. 5600 will get a new number. . . . The first Chesapeake & Ohio steam turbine-electric locomotive will be delivered by Baldwin October 6 and will go into freight service for a 60-day test before it is assigned to the fast passenger service for which it was designed.

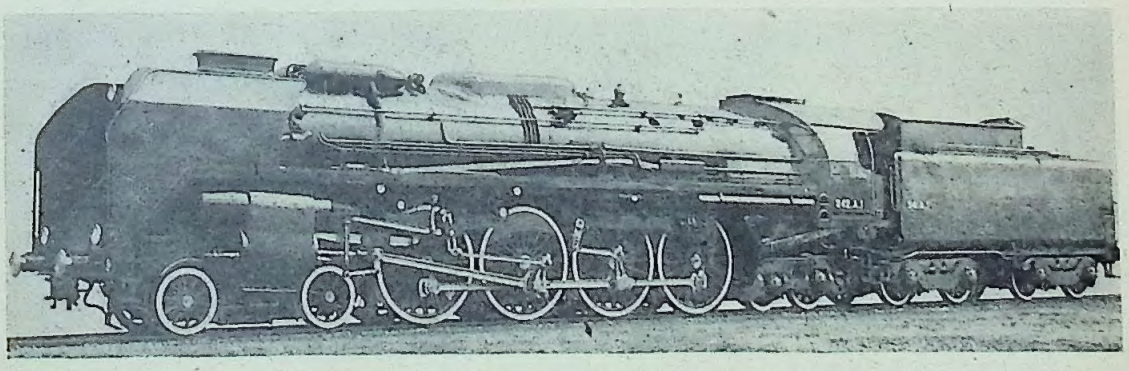
New Akron Station

The Erie Railroad has opened a new passenger station in Akron, O., close to the heart of the business district: South Broadway and Exchange Street. Heretofore Erie has been a tenant of the Union Station. President Robert E. Woodruff says the Erie can now establish itself "as a greater competitive factor and provide better service for the area."

The new station is unusually neat in appearance, with waiting room walls of decorative glass and with leather-upholstered chairs and couches. Access to trains is by means of a bridge over the tracks; the island platform is reached by a stairway and a reversible escalator.

New Terminal for New Orleans?

New Orleans' hodgepodge of railroad stations will be eliminated if present plans carry through. Citizens of the city have approved a $23.5 million bond issue for public improvements which, with supplemental funds from the rail-



This three-cylinder compound just completed by the French National Railroads was originally planned before the war.

Pullman-Standard designers developed this "P-S-1" box car for mass production. By eliminating special variations in specifications for each buyer, the car builders can sell a better product for less money and more can be built in a given time.

roads, state, and nation, will provide a $15 million passenger terminal and consolidated trackage. Most of the 144 highway grade crossings will be eliminated.

Railroads must reach an agreement as to details of the plan by December 1 in order to make use of a 6-mile canal which fits into the program as a railroad right of way and superhighway. At present, five passenger stations serve the eight trunk-line railroads entering the city.

Railfan Trips

[Send notices by October 5 for inclusion in the November issue.]

October 4-6: Trip over Virginia & Truckee leaving Oakland after dinner October 4, arriving Reno in time for breakfast; take V&T all day. Return to Reno for dinner. Leave Reno 9 p. m., arrive Oakland 7 a. m. October 6. Fare approximately $15 coach, $20 intermediate, depending on type of berth. Write Ray Tufvesen, California-Nevada Railroad Historical Society, 2045 E. 14th St., Oakland 6, Calif.

October 5 (or 12): Boston & Maine Railroad 400-mile trip around the mountains of New Hampshire. Leave North Station, Boston, about 9 a. m. Further details from Cyrus Hosmer Jr., New England Division, Railroad Enthusiasts, 34 Chester Rd., Belmont 78, Mass.

October 11 (or 18): Delaware, Lackawanna & Western inspection trip. Leaves Hoboken Terminal 2:30 p. m. Includes Hoboken enginehouse, West End Tower, Kingsland Shop via Harrison to Paterson, with photo stops on line. $1.75 in advance. Joint Railfan Trip Committee, Lackawanna Terminal, Hoboken, N. J.

October 12: Lehigh Valley Railroad over back-country lines of the Hemlock, Naples, and Seneca Falls branches. Edward Levandowski, Buffalo Chapter, National Railway Historical Society, 18 Kopernik St., Buffalo 6, N. Y.

October 18-19 (postponed from September 13-14): Northwestern Pacific and California Western railroads. Leave San Rafael October 18 at 8:20 a. m.; arrive Fort Bragg late same afternoon. Overnight accommodations available if arranged in advance. Side trip to logging camp at Ten Mile October 19. Leave Fort Bragg 1 p. m; arrive San Rafael about 8 p. m. Rail fare $10.75 including tax. Special bus from Oakland and San Francisco, $1 round trip. Hotel reservations extra; deposit $1.50; specify double or single. Sponsored by Pacific Coast Chapter, Railway & Locomotive Historical Society. Tickets and reservations from Stanley Merritt, 836 Alma Ave., Oakland, Calif.

October 19: New York, New Haven & Hartford "Canal Line" excursion, New Haven to Holyoke. Leave New Haven 9:20 a. m.; return 4.58 p. m. $3.75; half fare $2. Tickets must be purchased before Oct. 12. Edward G. Kelley, Connecticut Valley Chapter, National Railway Historical Society, 411 Shelton Ave., New Haven 11, Conn.

October 26 (postponed from August 10): Pennsylvania Railroad, New York Division and the following branches: Center Street, National Docks Railway, Millstone, South Trenton, Harsimus Grove, Greenville, Rocky Hill, Bordentown, Waldo Avenue, Bonhamtown, Millham, Camden & Amboy east of Bordentown. Photo stops at Waldo Avenue yard, East Trenton enginehouse and Bordentown wye. Starts 10 a. m. at Coal Street crossing, near River Street freight station (1 block northeast of PRR station), Newark, N. J. $5.50. Joint Railfan Trip Committee, Lackawanna Terminal, Hoboken, N. J.

November 1: National Model Railroad Association Midwest Region Convention trip over New York Central branch known as the Elkhart & Western Railroad. A stop will be made at the Indiana & Michigan Electric Company's large coaling docks, and at Elkhart for picture taking. Group will meet at La Salle Hotel, South Bend, Ind., and trip will begin about noon. For details write Joe Pfister, 1702 W. Washington Ave., South Bend 21, Ind.

November 23: Carriso Gorge circle trip, AT&SF Los Angeles to San Diego, SD&AE San Diego to Niland, SP Niland to Los Angeles. Leave about 7:30 a. m., return about 11:30 p. m. (subject to change). See Salton Sea, 260 feet below sea level; cement railroad in desert, spectacular Carriso Gorge trackage. Fare about $15 including tax. Railroad Boosters, P. O. Box 5279, Metropolitan Station, Los Angeles 55, Calif.

Anything Can Happen on the Monon

Even the horses in the fields turn to gape at the Monon. You never can tell what will come down those rails next. Last month it was the 91-year-old *William Mason* locomotive and train of the B&O, barnstorming from station to station for the road's 100th anniversary, and following right behind was the new streamlined *Hoosier*.

To the average man along the line the new streamliner is the most noticeable improvement yet made in fulfillment of John Barriger's promises of a year ago. On his first speaking trip through the Monon country after he took the presidency of the road, Barriger promised to give the Monon back to Indiana. He promised to put the passenger trains back, and he did. He promised faster freight service, and he did it. And he promised new streamliners. That was what the man in the street most wanted to see. To him it is the mark of a progressive railroad. But you can't just go out and buy a streamliner — not today anyhow.

For John Barriger to make good his promise of streamliners in only a year is, in 1947, a miracle of the first order. The story has been often told before of how he purchased three-year-old Army surplus hospital cars, rebuilt their modern structures and interiors in the road's Lafayette shops to convert them into coaches, diners, and parlor cars. But only the train that actually ran last month to the Monon's 100th birthday party can show what was accomplished.

In appearance and comfort the *Hoosier* is the equal of any train in the country. It is smartly styled and the passageways and aisles are comfortably wide. Ceilings in the dining and parlor cars are simulated plaster, and the dining compartment is wallpapered. The exterior is a distinguished gray and maroon. But the improvement to end all improvements on railway cars is that the toilet doors swing outward. Such concessions to roominess and comfort are traced to Vice President Frank Cheshire, who designed the train. Cheshire is a large man, and he built the train to be comfortable for his roomy frame. Result: It's comfortable for anyone.

The first trip of the new train was more than a personal triumph for Barriger and his staff. It was an occasion for celebration by all the towns and cities along the line, for the Monon, more than any other class 1 American railroad, has become a part of the territory it serves. The conservative family people along the line also noted with approval that Monon officials brought their families along on the first run to share their pride. Mrs. Barriger and the two older Barriger children, Jack and Ann, were everywhere on the train helping people to feel at home. Young railfan Stanley B. was also everywhere finding out what made the wheels go around. And Betty was comfortably ensconced with knitting, asking anyone from governor to general passenger agent to please wind some yarn. Mrs. Cheshire was more proud of the train than her husband — and less worried that something might go wrong.

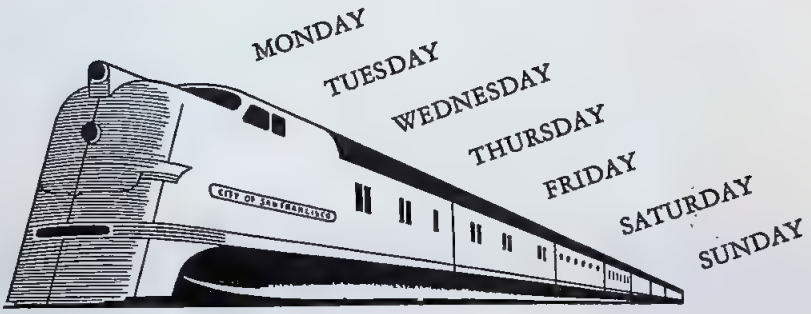
A. C. Kalmbach.

Suburban Train Leaves C & N W Depot

Around 250 Chicago & North Western trains depart and arrive from Chicago's North Western Station daily. Some 180 of them are in suburban service. Because the road hauls almost five times as many commuters as through passengers in the Chicago area, the station has a separate waiting room and exits for its suburban patrons. The installation on the right is for fueling diesels. The smokestack and structure behind it is part of the power plant for the station. In the background is Lake Street bridge on the city's elevated railroad. Photo by Henry J. McCord, Batavia, Ill.

Streamliner "City of San Francisco"

LEAVES EVERY DAY!



Going to San Francisco? Here is important news for business and pleasure travelers—the Streamliner *City of San Francisco* leaves *every day*, now, instead of three times a week. It continues the same swift 39¾ hour schedule between Chicago and San Francisco, over the direct Overland Route.

The daily *City* is as luxurious as ever, with the smartest of Pullman sleeping cars, dining units, lounge cars. And for people who want the glamour of a famous streamliner with economy, there are sleek, reserved-seat reclining chair cars and a budget-helping coffee shop car. (Extra fare for chair car passengers $5; for Pullman passengers, $15.)

Now, you may reserve your Pullman space or chair car seats *as far in advance as you wish*. Reserving in advance is advisable because this great streamliner continues to be one of the nation's most popular trains.

Faster "San Francisco Overland"

This popular daily train is faster, now, too. Just 48 hours, 50 minutes, Chicago to San Francisco, 48 hours flat, eastbound. No extra fare. A thrilling scenic day ride over the rugged High Sierra. Fine Pullmans, lounge car, diner. Economical reserved-seat reclining chair cars. Coffee shop car. Through Pullmans also between New York and San Francisco, St. Louis and San Francisco.

SCHEDULES

via Chicago and Northwestern, Union Pacific, Southern Pacific

WESTBOUND • *Daily*	*City of San Francisco*	*San Francisco Overland*
Lv. Chicago	7.30 p.m.	8.00 p.m.
Ar. San Francisco (Ferry) .	9.15 a.m.	6.50 p.m.

EASTBOUND • *Daily*	*City of San Francisco*	*San Francisco Overland*
Lv. San Francisco (Ferry) .	5.00 p.m.	11.00 a.m.
Ar. Chicago	10.45 a.m.	1.00 p.m.

S·P The friendly Southern Pacific

Let's Wake Up

Millions of bushels of food may rot in our fields this harvest time, instead of being available to the world's markets — because we are short of freight cars. Here is a way that thousands of cars can be freed for service in a hurry.

Are old-line managements asleep in the dell while many freight trains creep at a snail's pace—by agreement?

Rip Van Winkle!

ARE you interested in the price of food? Does it give you a twinge to see those pictures of mountains of wheat piled on the ground and potatoes going to rot—when there's a desperate world food crisis?

The bottle-neck is our freight-car shortage. But thousands of cars could be freed by a single decision—if old-line railroad managements would act.

Don't Blame the War!

This is hard to believe, but it's true: we have today only three-fourths as many freight cars in our country as we had twenty years ago. This shrunken fleet is now called on to handle the greatest peacetime traffic in history. And the war itself is not to blame for the shortage—for in no single year from 1925 to the start of hostilities did the railroad industry buy as many cars as it junked. Twenty years is a long time for even Rip Van Winkle to sleep!

What Can Be Done?

There is at least one remedy that can be applied at once—despite the steel shortage and other difficulties in car-building. This remedy requires no new equipment, no period of time to work out—nothing but an act of management:

Lift what appear to be agreements between railroads that deliberately slow down many freight trains!

Here is an example. There are eight important routes by which you can ship "fast" freight from California to Chicago. These routes vary in length as much as 450 miles. But, curiously, the time schedule for each of the eight is exactly 118 hours—and 30 minutes!

Similarly, scheduled freight trains moving west over the important routes from Chicago to the Coast areas, despite great differences in terrain and mileage, take ex actly 130 hours—on the nose!

Is This Free Competition?

Could it be that these schedules are fixed by agreement? That the trains which could be fastest are held back for the slowest—so that no road can have even the slightest competitive advantage?

Railroad men know that, in many instances, a whole day could be cut off these schedules between California and Chicago—if managements would simply order it. If that were done, on these roads and on others, it would ease the national car shortage at once!

There is good reason to believe that by lifting deliberate freight slowdowns, on the roads that still practice them, *we could provide more cars this summer and fall than our shops can possibly build.* And every car is desperately needed!

A Call For Action!

The next few weeks will be the critical ones in our food problem. Our wheat crop is estimated to exceed any previous record by 300 million bushels. *It is even now being piled in the fields—for want of cars.*

If you feel as strongly about this as the C&O does, write to your newspaper and your congressman. Do it today while it is on your mind.

Ask them to stir up Rip Van Winkle—and tell him that time is short. Demand that our trains be scheduled not merely to suit the private deals of the railroads, but so that we can make the best use, for the whole public, of our shamefully depleted stock of freight cars!

The Chesapeake and Ohio Railway

Terminal Tower, Cleveland 1, Ohio

A Ride in the Cab of a GG-1

You'll thrill to the surge of engine 4917 as Engineer Harry Mayell notches her up to 85 and brings the Metropolitan in on time

BY ERIC A. GRUBB

It's a clean spring morning in the Pennsylvania Terminal at New York City, and we're in the cab of the 235-ton locomotive 4917. We hear a low hum from the blower in the heating boiler compartment, and steam pressure shows 75 pounds on the dial. But steam is auxiliary and all else is quiet, for this is an electric engine, a GG-1, rated at 4620 horses.

Behind us is train 25—"14 cars, 825 tons," as it is described on the slip of paper handed up to Harry Mayell, the engineer. Train 25 is the *Metropolitan,* westbound for Chicago and St. Louis. When the starting signal chirps, we'll go swooping down through one of the twin tunnels 100 feet under the Hudson River and come out on the Jersey side onto one of the world's busiest stretches of railroad, the 86-mile speedway to North Philadelphia.

We're carded at 1 hour 35 minutes to North Philadelphia. This is actual running time, so we'll have to average 54 miles an hour with stops at Newark and Trenton. The tightest bit of timing on the whole run shows between Newark and Trenton, where we must cover 48.1 miles in 48 minutes—an average of 60 miles an hour. This is our most difficult spurt, too. Speed is restricted to 55 miles an hour through the long reverse curve at Elizabeth, and the 6-mile uphill pull from Rahway to Metuchen is the stiffest grade going west over the New York Division. Though our load seems comparatively light for a locomotive capable of accelerating at 8500 horsepower, there'll be little opportunity for loitering en route when you allow for the time it takes to clear the New York zone and to enter the Philadelphia area.

The 4917 seems as big as an ocean liner when you're in the cab. It's a spotless compartment, clean and comfortable as a model kitchen, and the visibility is fine.

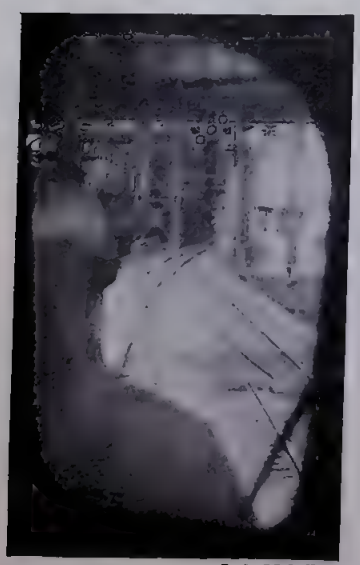
"Simple compared with a steam job," remarks Harry as he points out the control equipment. Convenient to him are the operating controller, two air-brake valves, the whistle pull, air-sander valve, and a few miscellaneous fittings. Facing him are two air-brake gauges, three ammeters which indicate current consumption in the six twin motors, and the vertical panel which reproduces the wayside position-light signal indications. It lights four diagrams: "clear" (at least two blocks clear), "approach-medium" (train in second block ahead), "approach" (train in block ahead), and "caution—slow speed" (train ahead in same block).

Another vertical panel has a row of labeled bull's-eyes. Harry explains how they keep him informed of the functioning of his big machine. For example, should the drivers slip, or the water in the heating boiler fall too low, or the ventilating blowers fail, the corresponding annunciator would light up and sound a buzzer.

There's still a couple of minutes to go and we're curious about the train heating equipment. Bill Riley, the fireman, beckons us down the passageway to the boiler compartment. On the way down, in the center of the housing, we pass the air compressors and peer in through screens at the transformer with its maze of switching apparatus. The multitubular heating boiler is at the far end.

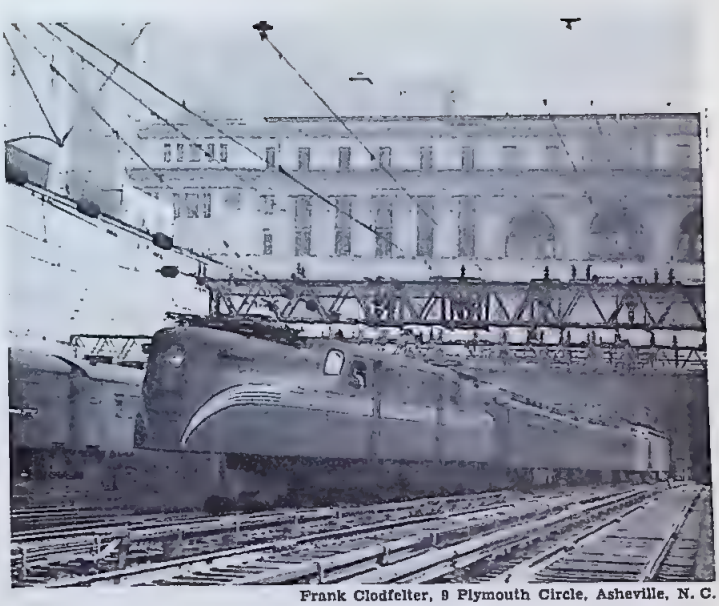
"Oil-fired," Bill explains. "I set it to deliver steam to the train line at a definite pressure and from there on she's automatic."

But it's 8 o'clock and there's the chirp from behind. Imperceptibly we're off, gliding gently into the Hudson tunnel, picking up speed with a soft rumble. These big electrics are so effortless that it's hard to realize the drama of the moment. Compared with a steam locomotive start, a certain thrill is lacking, for we are simply transforming power and not generating it. We miss the thunder of exhaust, the familiar hissing, jostling, ironclad clatter. On 4917 there's just the clack-clack of the circuit breaker as she builds up her voltage in relays—and a quick responsive



J. A. McLellan.

"Approach." This is the signal which protects the Passaic River lift bridge just east of the Newark station. View is from the engineer's side of a GG-1 as it sits on Track 1 in the station, loading passengers for New York.



A GG-1 leaves Pennsylvania Station, New York. Soon it will clatter into one of the tubes under the Hudson River and emerge on the New Jersey shore. Duties of a fireman on an electric locomotive are similar to those of a diesel fireman. He watches gauges, tends the steam boiler, and calls out the signal indications to the engineer.

Frank Clodfelter, 9 Plymouth Circle, Asheville, N. C.

surge forward, more like a motor car than a train. But it's that acceleration power that impresses us. More about it later.

Our headlight throws a clean fan of light down the dark tube. As we "touch bottom," the imagination gropes upward to picture the dark hulks of everything from the *Queen Mary* to the Moran tugs floating in the olive-green Hudson nearly 100 feet above us.

A silver bull's-eye glows on the upgrade ahead. *Wham!* We punch it squarely at 50 miles an hour and careen into sunshine onto the Jersey "Meadows." Then it's a quick swing to the left, and Harry notches her up to 65 as we go whisking over railroads, freight yards, waterways, and highways on the magnificent double-track stretch which traverses the Meadows on a succession of fills and viaducts for 5 miles to Newark.

Just before we slacken for the Passaic River lift bridge, Bill comes forward with the kilowatt-hour meter reading and enters it on the record card provided for that purpose. The meter will be read again at the end of the run and will show the amount of power the trip has consumed.

"Should use about 8650 kilowatt-hours to Harrisburg," Bill says.

Newark at 8:15. Out again at 8:18. A straightaway beckons and 4917 surges ahead as smoothly as a racing car. Harry has to let her travel now — we're one minute late out of Newark. And besides that, we're already 10 miles from New York; so it is urgent for Harry to start building some margin over the mile-a-minute average if he's going to hold the train on schedule over the entire distance. In fact, this is going to take careful compensation all along the way — pushing the locomotive up to a couple of miles an hour above scheduled speed as quickly as possible after any delay. There's a definite technique to it, too. Watch Harry's eyes glint on the ammeter dial as he feeds the notches to her. He's carefully holding the current right up to the allowable acceleration limit and stepping up the controller just as fast as those motors will absorb the juice.

"Got to hold her at 2500 amps to the 17th notch," Harry explains. "From there up to the 22nd, the power limit is 2200."

And then as we hit our stride on a level stretch, Harry ratchets the controller down and the current drops to about 1100 amperes. He keeps his hand constantly on the controller handle, for these locomotives are equipped with dead-man control; if he released his hold the brakes would apply in emergency and, as he says, "We'd upset the diner and have to pay for several suits of clothes."

We're stepping along at 75, just as smooth as cream, when the cab signal whistle calls our attention to a change of indications. We're closing in too fast on a local to Philly. "He'll be out of our way at Elizabeth," Bill assures us. So until Elizabeth we have to hold back a bit. We jog along at a mere 55 or so; you can almost see 4917 shaking her shoulders like a fresh horse held in.

"Those cab signals are wonderful," says Harry. "You noticed, just now, how the signal changed while we were nowhere near a wayside signal. It will do the same when the route is clear, and we may save a minute on account of it. Without the cab signal, we would have to hold our speed down until the next wayside signal was visible."

Just before the long curve at Elizabeth the "clear" indication beckons us on. "Now we've got the railroad!" says Bill; and as we go tilting into the curve both he and Harry study their watches. Their conclusion is that we have some three minutes to overhaul.

And then what a moment when we feel her big smooth snout come nosing eagerly out of the bend at 55 and we watch Harry start the run for the hill at Rahway. Here is power! Harry nurses the controller wide. Eagle eyes glint on the power dial as he holds the needle right up to 2500 amps and pushes her toward the 17th notch just as fast as she can possibly take it. The immense tugging makes you gasp with the feel of it. Acceleration plus — that's it! The seat pushes you in the middle of the back.

What would happen if Harry should tip the ammeter needle too far? "She's got overload protection," Bill explains. "There's an overload relay set to cut out the main motors if the amperage goes over 3000. If she blew, Harry

Heavy lines← indicate Pennsylvania Railroad trackage between New York and Philadelphia; lighter lines show other railroads. Westbound train↓ emerges from Homestead Portal at west end of Hudson River tunnels. Tracks are signaled for both directions.

would have to shut off the controller and reset the relay before he could proceed."

As we go lifting into our stride the buzzer sounds as the drivers slip. Harry gets them checked in a jiffy with a couple of quick notches down on the controller. The motors are protected against damage in such cases by a system of slip relays. Harry explains that had the speed differential between the drivers exceeded 8 miles an hour, a relay would have opened the circuit on the wheels involved; should the speed differential rise above 20 miles an hour in a slip, all motor circuits would automatically be opened. In addition, should any major electrical trouble develop on the locomotive, substation breakers would disconnect the particular section of trolley wire feeding the locomotive.

Now there's Rahway up ahead. Swoosh! We hit the foot of the hill at 78 and go rocketing up the grade with 1500 amperes showing on the meter. Menlo Park and Metuchen go by at the same flicker, between 78 and 79. At Metuchen we've caught up a minute and a half. After that the needle slides gently up to 80.

Harry sits satisfied and watchful; he likes the way she handles. "She rides very clean," he says. And at these high velocities the riding qualities of the GG-1's are exceptional. You come to accept a top-drawer speed of 80 miles an hour as you do a mere dawdling 50. It's a smooth, humming flight, with only an occasional trifling sidesway. There's no feeling of wheels rolling on rails; we're gliding, not rolling, along.

Harry holds our pace a couple of miles above scheduled speed until just after we pass New Brunswick. And then, on a favorable stretch, he shuts off the power and we go "drifting" on level and slightly descending grades nearly 10 miles to Princeton Junction. The speed gradually drops to about 50 just before we reach the station. Then he is again fisting the controller and we glide through exactly on schedule. It is a nice piece of work on the part of the engineer, and a striking illustration of the low rolling resistance of an electric locomotive equipped throughout with roller bearings.

Princeton Junction to Trenton now, 10 miles over long straightaways and very slightly descending grades. The sunlit track flows straight toward us, pouring smoothly away under 4917's blunt

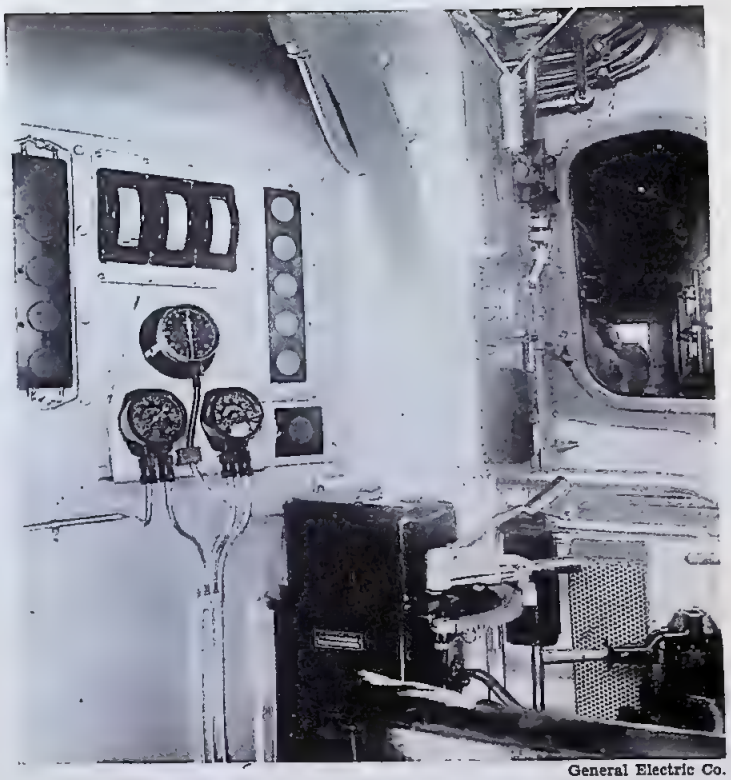
Pennsylvania Railroad.

muzzle. One of the particular features of this stretch is the fascinating view ahead down the four-track speedway. Long vistas of 152-pound steel gleam between two endless rows of poles . . . overhead, the precise and tensile filament of power lines, struts, and insulators . . . the steady procession of transverse bridges supporting the position-light signals. One of the most interesting things about it is the spider-web patterns made by the catenary, particularly where it slopes on a curve and the struts and transverses make such beautiful angles of stress.

9:03. Trenton. A long string of passengers to entrain. Away again at 9:07 and two minutes late at that. North Philadelphia next . . . 28 more high-speed mainline miles and we're due there in 28 minutes.

So, clear of the yards, we go at it again. It's a last bit of steeplechase — chasing two lost minutes. More than that, this track's a beehive of activity, and a delayed train lays out other trains.

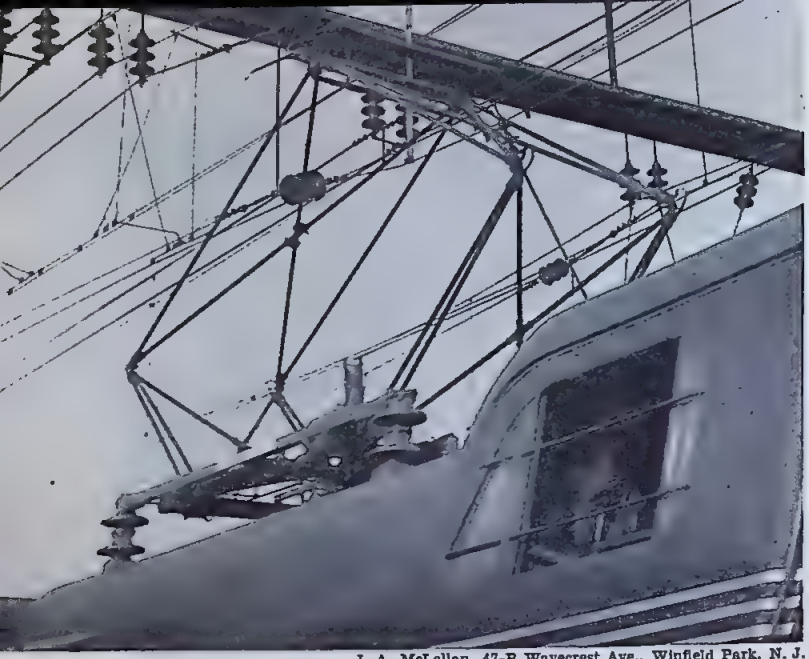
We come off the Delaware River



General Electric Co.

The engineer sits in a comfortable chair with locomotive and train brakes convenient to his right hand; he works the controller with his left. Lights on panel at far left indicate (from top to bottom) low water in boiler, blower or oil pump stopped, overload tripped, drivers slipping, and pantograph relay tripped. The three ammeters show current consumption, and the other vertical panel gives cab signal indications. Large round dial is the speedometer; others are air brake gauges. Light beneath signal panel indicates field changeover when connections of the shunt across motor main fields have changed. This occurs automatically when the locomotive gets above starting speed. Rather than deadhead one GG-1 when it is needed at the other end of the run, Pennsylvania runs two in tandem and saves cost of one crew.

Robert A. Le Massena, 398 N. Maple Ave., East Orange 16, N. J.



J. A. McLellan, 47-B Wavecrest Ave., Winfield Park, N. J.

Pennsylvania Railroad follows the usual practice of operating with the forward pantograph down and the rear one↑ raised. The idea is that if the rear pantograph fouls, the forward one can still be used; but if the forward one were normally raised and it fouled, the rear one would likely be torn off and made unusable. Train 787↓ on branch line out of Rahway, N. J.

Above, Arthur F. Knauer, Colonia, N. J.; below, Pennsylvania Railroad.

bridge at 55, traction motors singing . . . humming higher, higher. Morrisville at 68. Down through those busy industrial stretches. Clear! Clear! Cruising speed is 80 through here, but it's a bit of gentle upgrade and the controller has to be kept open to the finish.

Nearing Bristol. 18 miles more to go . . . 17 minutes left to make North Philadelphia. We meet the *Silver Meteor* headed east behind another GG-1; she left Florida yesterday morning. Lots of eastbound movement through here. Another flash . . . keystone maroon, ruled with gold . . . it's the *Broadway* from Chicago. These are but two of the 33 important through passenger trains simultaneously en route between New York and Philadelphia at this time of the morning. They link practically the entire eastern and southern United States and eastern Canada to the seaboard cities.

About 3 miles east of Bristol, 4917's air horn shouts a deep-toned blasphemy as we slacken for work along the line.

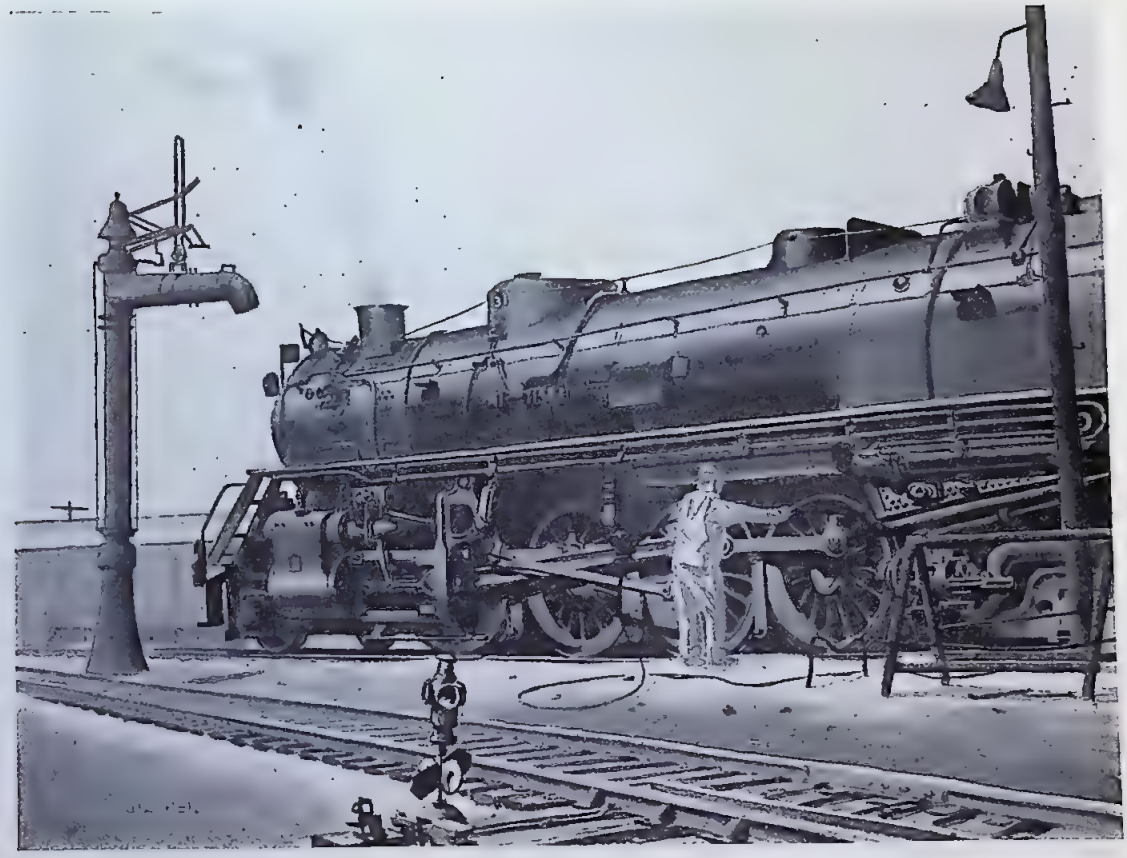
"We'll be knocked out another minute!" Bill says. "We'll get it back," assures Harry.

And we do.

That final headlong spurt seems like a mere few seconds of golden excitement; in reality it is nearly five minutes of perfect humming flight — one last feel of that tremendous forward surge, with its sense of unlimited power. Harry hunches like a jockey on the homestretch. The speed mounts higher and higher. The pace is breath-taking as he holds the needle right up to 85. And the riding is absolutely perfect. Not a trace of roughness or vibration. Just like a Cadillac floating over a good road.

There is bravura in the long howl Harry gives Frankford Junction as we slacken for the reverse curve. He has exactly wiped out our delay. And a few moments later we glide up to the platform at North Philadelphia with half a minute to spare.

Commuters between New York and 30th Street Station←, Philadelphia, have their choice of 42 trains a day in each direction. Running time of trains averages about 1 hour 35 minutes.



D&TS Engine Servicing

ILLUSTRATED BY GIL REID

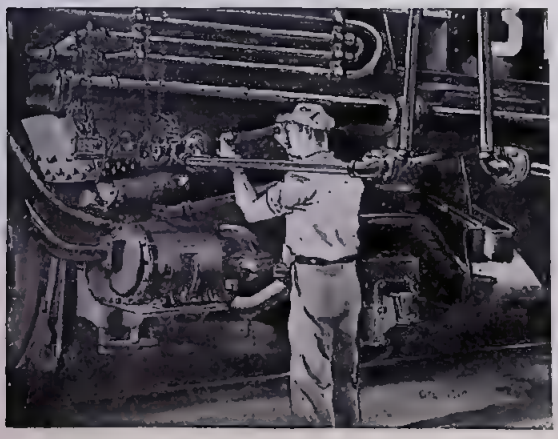
Engine servicing, whether it is on a large railroad or a small one, is much the same throughout the country. Certain operations must be performed at the end of every locomotive run if the iron steed is to remain in its prime. This is true of diesel locomotives as well as steam, although their requirements differ. Let's follow engine 31 of the Detroit & Toledo Shore Line through the servicing procedure at Lang, 2 miles northeast of Toledo, O. Here the D&TS maintains a roundhouse↙ on the bank of Ottawa River. The workman↗ is spraying steam and hot water over engine's running gear to clean it thoroughly.

After her firebox has been cleaned, 31 picks up a full load of coal and moves to the 100-foot "merry-go-round" for a leisurely trip to her roundhouse stall. The circular enginehouse provides ample working space at the head end.

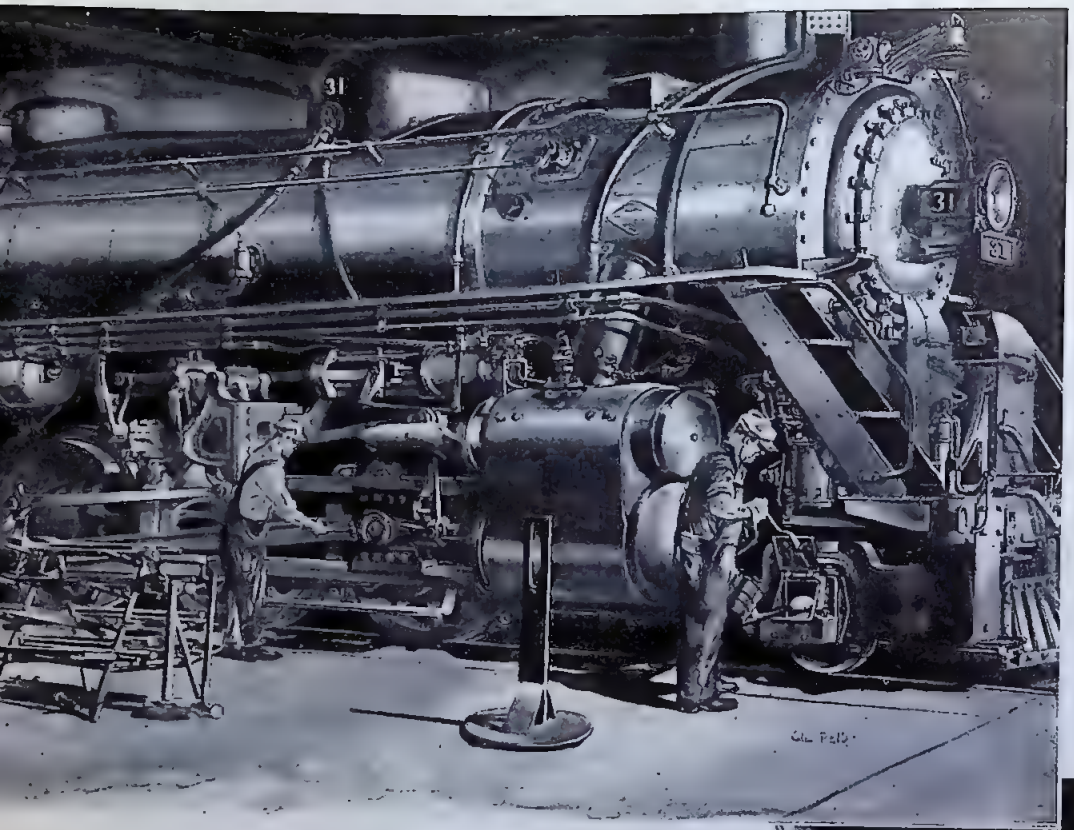
The hostler walks 31 into her stall. At the right moment he sets the brakes to spot her stack under the smoke vent.

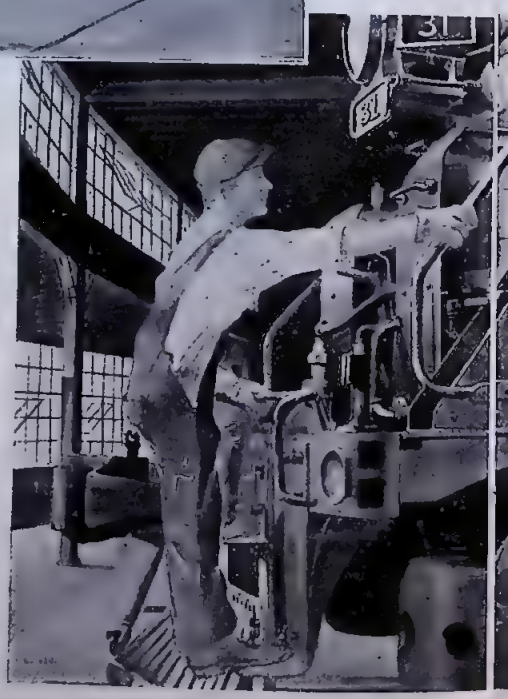
All air is drained from reservoirs, pumps, etc., to prevent moisture from rusting the equipment. This is the "bleed-off."

31 receives a steam transfusion. Roundhouse steam enters boiler via the blow-off cock to maintain working pressure.



Engine report lists 31's servicing needs. Workmen must take care of every item before 31 goes back into service.

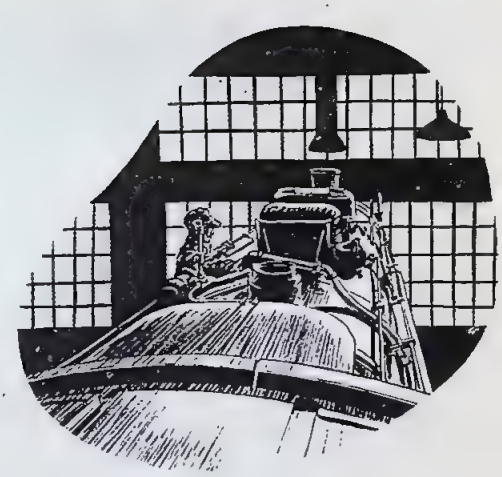




Waste is used in journal boxes to feed oil to the friction bearings. Here the oiler checks the waste packing in the journal box of 31's leading truck. If it shows signs of dirt or bits of metal the packing will be replaced with new waste to avert scored journals.

It takes a lot of climbing to inspect a locomotive. Roundhouse men must check the generator headlight, marker lamps, bell ringer, sanding valves, and other topside equipment.

Engine 31 will have no secrets from these men↙ after they finish their preliminary inspection tour. Every bolt gets a "sounding" from the machinist's ball-peen hammer. If anything is loose, the sound will warn the machinist. The oiler checks all journals, adds oil and repacks waste. He carries a spouted bucket of oil and a hook to open journal lids. That gadget by the cylinder is used to hold the cylinder head in position after it has been removed from the block. It eliminates a lot of hard work when the head is put back in place.



"Wiping the jacket"→ is a tough job, but it's a necessary finishing touch. All D&TS motive power is kept remarkably clean; the dark bottle-green locomotives are an impressive sight. The boilerman↘ "adjusts the pops" to keep the safety valves at the right tension. He uses a portable pressure gauge which is shaped somewhat like a bango signal. It sits atop the boiler, facing him.

Highways would be a lot safer if motorists checked their lights as carefully as the railroads do. When a classification light fails on a locomotive, it is replaced at the next servicing. Workman's right hand is grasping the standard of a permanent metal flag. All trains run as extras on the D&TS because it handles nothing but freight.

Now 31 is ready to go to work again. Her engineer has finished the brake test and waves confidently to a yard switchman as he waits for the highball. Soon 31 will be pounding the double-track main toward Detroit with carloads destined for Grand Trunk Western and other connections at the Motor City. D&TS is owned jointly by Grand Trunk Western and the Nickel Plate Road. It is a "bridge" route; more than 90 per cent of its traffic originates beyond its 56 miles of line.

Sunshine on the Southland

This Florida resort train is all things to all people along its 1324-mile route over four railroads and in seven states

BY ROY G. CLARK

The snow, driven by a biting wind, stings our faces as we walk to the Canal Street entrance of the Chicago Union Station. Automobile tires crunch coldly on the icy streets. Tonight's paper says that it will be zero by morning.

The snug warmth of our Pullman berths on the *Southland* beckons, but we take time enough for a quick walk along the track platform to see what we have tonight. Up front is one of the Pennsylvania's K-3 Pacifics, designed many years ago but still handling jobs that most other Pacifics have surrendered to bigger power.

Behind her are two service cars, two coaches, one roomette car for Cincinnati passengers, and five Florida-bound Pullmans that we'll talk about a bit later. The *Southland's* consist frequently varies because some of the Florida Pullmans operate on alternate schedules. When the train is light, additional mail and express cars are often added to complete the tonnage. Tonight we have only 10 cars, possibly because the ice and snow may make the going a bit difficult.

The chill is eating in, and we hustle to the warmth of the blankets in our Tampa car. As we lie there, waiting the all-aboard call at 11:35 p.m.,* we hear a passenger across the aisle tell the porter to get him up for Cincinnati in the morning. This reminds us that the *Southland* is more than a Florida resort train. It is all things to all people along its long route over four railroads and in seven states.

From Chicago and Detroit to Cincinnati it is a popular business overnight train; then it is a heavily patronized general travel train from Cincinnati to Atlanta; then, again, it becomes an essential business overnight train from Atlanta to Jacksonville, Tampa and St. Petersburg. In its travels it adds and drops Pullmans in bewildering sequence. A total of 11 Pullmans are handled en route, although only seven of them operate between Chicago and Florida points.

It is interesting to know that, over at the Dearborn and Central stations here in Chicago, passengers tonight are going to bed in Pullmans that will be in our *Southland* tomorrow night. The *Dixie Flyer,* via the Chicago & Eastern Illinois out of Chicago, will turn a car over to us at Atlanta. The *Seminole,* on the Illinois Central, will give us a car at Albany, Ga.

An amusing incident happened last winter. Two men were going to St. Petersburg. One of them stoutly maintained that the *Seminole* was the only comfortable way to get there. The other averred that he'd used the *Southland* for years and that it was best. Both of them were considerably bewildered, the second morning after their departures on their pet trains, to meet each other in the dining car at breakfast. Each accused the other of changing his mind at the last minute and of taking the other train. The dining-car steward finally convinced them that it was all one train out of Albany, regardless of which one they started out on.

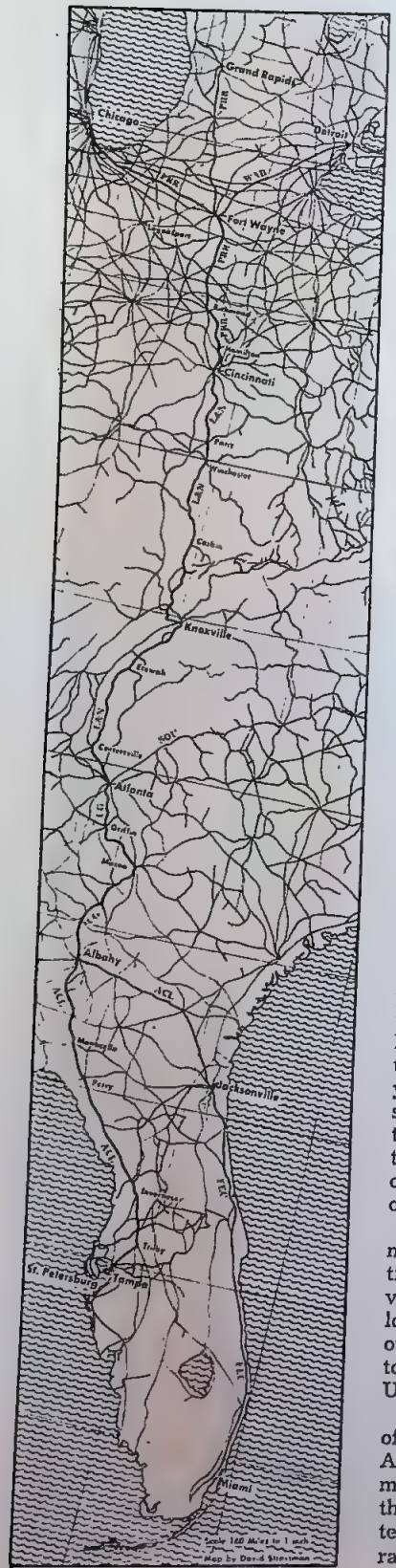
However, none of the passengers on the other two trains will get off to the flying start that we have on the *Southland.* The first leg of the trip is to Ft. Wayne over the steel race track that the Pennsylvania justifiably calls the Broadway of America. For 123 miles, through the flatlands of northern Indiana between Gary and Ft. Wayne, our train streaks along at an average speed of better than 60 miles an hour. Incidentally, the Pennsylvania has 16 eastbound trains that cover this stretch at a mile-a-minute clip or better.

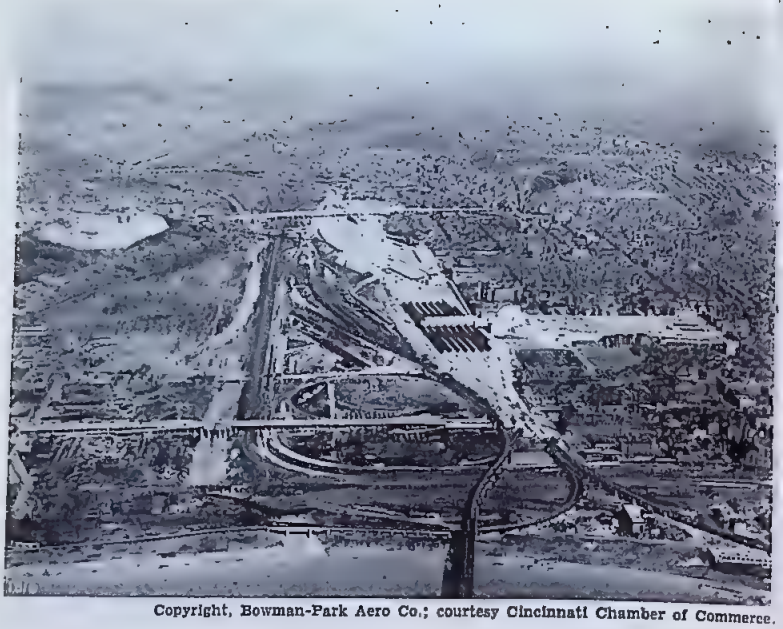
At Ft. Wayne, while we're asleep, we take on a Detroit-to-Jacksonville express car and a Detroit-to-Tampa Pullman from the Wabash, as well as a Grand Rapids-to-Cincinnati Pullman from the Pennsylvania's Michigan Division. When we swing southward out of Ft. Wayne on the single-track line to Richmond and Cincinnati, we have 13 cars, and our average speed drops back to around 45 miles per hour — not because the K-3 can't do better, but because the track is too full of curves and grades to make a race track of it. We're in the hilly region of Indiana now.

At one time the *Southland* was routed from Chicago to Cincinnati via Logansport, the route used by all other Pennsylvania trains between Chicago and Cincinnati, but for many years it has been sent around through Ft. Wayne in order to handle the Detroit and Grand Rapids Pullmans without adding another train. Northbound into Chicago, too, it is combined with the Wabash-Pennsylvania's *Mid-City Express,* fast overnight train from Detroit to Chicago.

At 4:20 a.m. we're through Richmond, junction point with the Logansport line and the heavy-duty line from New York to St. Louis. A mile east of town we swing southward again on single track to Hamilton and Cincinnati, in the rough hills of the Miami and Ohio river valleys. There is very little tangent on

* All times mentioned in text and illustrations are based on the 1946 winter season schedule. The present schedule is different.





Copyright, Bowman-Park Aero Co.; courtesy Cincinnati Chamber of Commerce.

It's a long trek← from Chicago to Tampa: 1324 miles through seven states on a modern relay race. The Pennsylvania Railroad turns the Southland over to the Louisville & Nashville at Cincinnati Union Terminal↑. L&N does the honors to Atlanta and turns the train over to Central of Georgia. The Georgia line carries the Southland to Albany, and the Atlantic Coast Line does the rest. Cincinnati Union Terminal includes 22 buildings which were constructed at a cost of $41 million. Work was started in 1929; the station was opened in 1933.

this piece of track and high speeds are impossible, although C. T. C. has cut delays in recent years.

At East Norwood, suburb of Cincinnati, we join Baltimore & Ohio tracks to reach the Cincinnati Union Terminal Station. A prolonged controversy about the use of the B&O tracks by the Pennsylvania held up plans for the unified Cincinnati terminal for years. Quite naturally, the Pennsylvania couldn't quite see using the tracks of a chief competitor to get into a major city, when its own rails reached into the heart of town.

However, a patient city administration finally got the situation squared off. The Pennsylvania was convinced that it was losing no prestige by running over the B&O for 8 miles, and today's magnificent Cincinnati Union Terminal is a reality.

A visit to the great concourse of this most beautiful of all American railroad stations is a must for every traveler passing through Cincinnati. The architects set out to prove that a railroad station can be both beautiful and practical, and the crowds of gaping sight-seers crowding the concourse are proof that they succeeded. The huge wall murals, depicting outstanding events in the history of the city and of the railroads serving it, are so engrossing that many a passenger has almost missed his train.

Unlike many greasy-spoon station restaurants, the dining room is so gracious that it is often used for local banquets and other civic events. The station has powder rooms for the ladies, lounge rooms for the men, a hospital for emergencies — even a newsreel theater. With its softly subdued lights and great high-domed entrance hall, the station is as beautiful as a cathedral.

Downstairs where the work is done, the operating is tops in efficiency. A long and complicated train like our *Southland* can be broken up, reassembled into two sections, and be ready to depart in 35 minutes, with time to spare.

While we've been upstairs, two Union Terminal switch crews have cut out the Cincinnati coaches

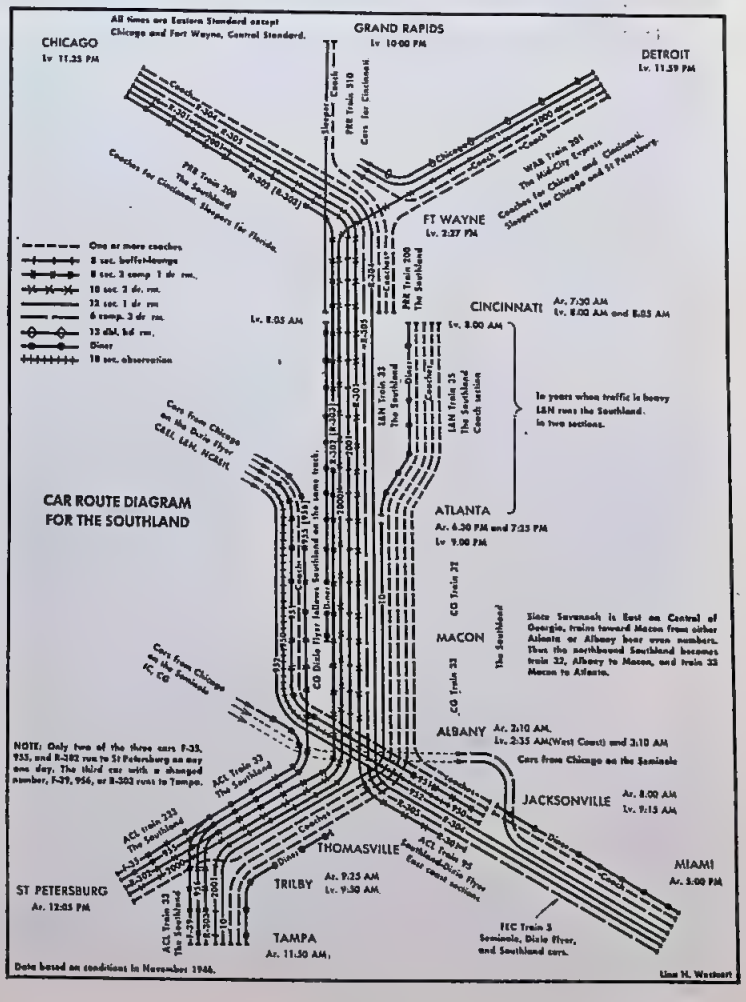
M. B. Cooke, 122 Veterans Dr., Montgomery, Ala.

When the Southland passes through Perry↑, Fla., in the early morning, it may be running behind ex-DL&W 1405, as it was this misty spring morning in 1946. The Southland not only changes engines many times but also changes its consist, as shown in the chart→.

and Pullmans, have switched the service cars to the head end of the Louisville & Nashville coach section, and have assembled our Pullmans into a second section. The two sections now stand on parallel tracks, ready for L&N to take over on the lap to Atlanta.

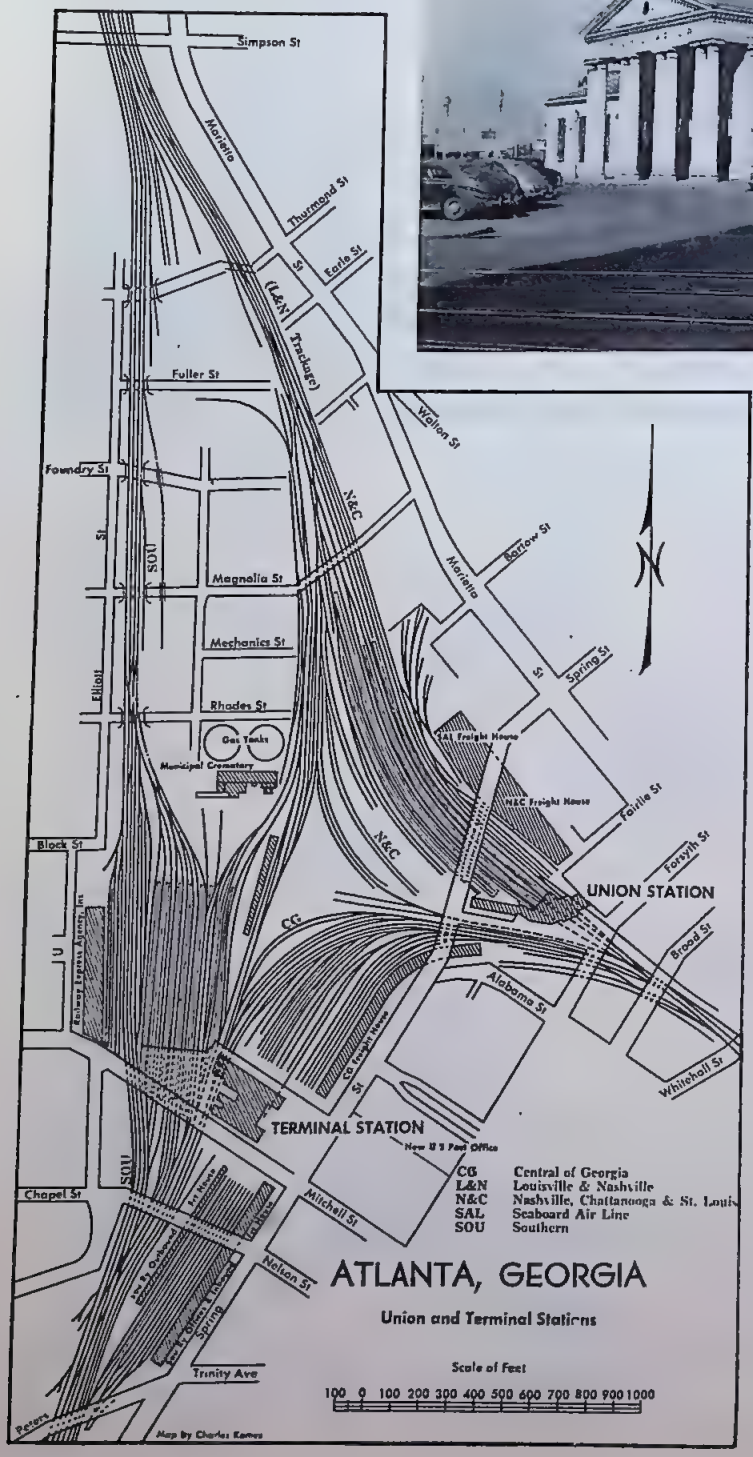
The coach section leaves at 8 a.m. Up ahead is a 4000-horsepower General Motors diesel, No. 457, and behind her are five service cars, four Florida coaches, three Atlanta coaches, a local coach and a diner. Strangely enough, this coach section makes the run to Atlanta in 50 minutes less running time than the Pullman section, and with fewer stops. It is one instance where coach passengers get a quicker trip than the deluxe folks.

Our Pullman section leaves at 8:05 with one express car from New York to Oak Ridge (more atomic bombs?), one refrigerator car from Cleveland to Atlanta, one coach used as a rider, one diner, and six Florida Pullmans. Our 10 cars are pulled by one of the L&N's most powerful steam


CAR ROUTE DIAGRAM FOR THE SOUTHLAND
All times are Eastern Standard except Chicago and Fort Wayne, Central Standard.
CHICAGO
Lv 11.35 PM
GRAND RAPIDS
Lv 10:00 PM
DETROIT
Lv. 11.59 PM
FT WAYNE
Lv. 2:27 PM
CINCINNATI
Ar. 7:30 AM
Lv. 8:00 AM and 8.05 AM
Lv. 8.05 AM
Lv. 8.00 AM
In years when traffic is heavy L&N runs the Southland in two sections.
ATLANTA
Ar. 6.30 PM and 7:25 PM
Lv 9.00 PM
MACON
ALBANY
Ar. 2:10 AM.
Lv. 2:35 AM(West Coast) and 3:10 AM
JACKSONVILLE
Ar. 8.00 AM
Lv. 9:15 AM
MIAMI
Ar. 5:00 PM
THOMASVILLE
TRILBY
Ar. 9.25 AM
Lv. 9.30 AM
ST PETERSBURG
Ar. 12:05 PM
TAMPA
Ar. 11.50 AM.
One or more coaches
8 sec. buffet-lounge
8 sec. 3 comp. 1 dr. rm.
10 sec. 2 dr. rm.
12 sec. 1 dr. rm
6 comp. 3 dr. rm.
13 dbl. bd. rm.
Diner
10 sec. observation
NOTE: Only two of the three cars F-35, 955, and R-382 run to St Petersburg on any one day. The third car with a changed number, F-39, 956, or R-383 runs to Tampa.
Data based on conditions in November 1946.
Lina H. Wachsert

The Southland goes through Atlanta, but southbound it arrives at Union Station→ and leaves from Terminal Station a half-mile away. Northbound trains reverse the procedure. Map↓ shows the track layout in Atlanta.

Nashville, Chattanooga & St. Louis.



locomotives, a Class M-1, numbered 1960. She is a 2-8-4 built by Baldwin in 1944 and designed especially for this tough run through the rugged Kentucky and Cumberland mountains. Her advantage over the conventional Mountain type (4-8-2) is that, with the truck wheel arrangement reversed, support is available for a larger firebox and combustion chamber. The 1960 will show us what she can do when we begin hitting the Kentucky and Tennessee grades.

While we're waiting for our Pullman section to pull out, let's look at the L&N line between here and Atlanta. Compared with the rest of the system, it is a new railroad. Through service from Cincinnati to Atlanta was not accomplished until April, 1905. Previously, an adventurous passenger might make the trip via the Kentucky Central Railroad to Sinks, Ky., then the L&N to Jellico, Tenn., and then over the East Tennessee, Virginia & Georgia (predecessor of the Southern System) into Knoxville. Then, if he was a particularly hardy sort of a fellow, he might take the narrow-gauge Marietta & North Georgia over the famous Hook & Eye line through the Blue Ridge Mountains into Atlanta.

Eventually the L&N took over these lines and built a new low-grade road west of the Blue Ridge Mountains from Etowah to Cartersville. In 1906 the road was able to offer relatively fast serv-

Richard E. Prince, 1141 Larchmont Cres., Norfolk, Va.

Louisville & Nashville trains run into Atlanta by trackage rights on the Nashville, Chattanooga & St. Louis. Northbound Southland↗ is leaving Atlanta. Terminal Station↘ is where Central of Georgia takes over southbound through trains and relinquishes northbound trains. Engine 442 is a Pacific.

ice from the Queen City to Atlanta. Two years later the first Chicago-Florida through train, the *South Atlantic Limited*, was put into service. In December, 1915, the *Southland* came into being and has been operated continuously since.

Today's L&N is a superb piece of railroad. It is double track to Corbin, 187 miles, with automatic block signals all the way to Atlanta and with automatic train stop control from Corbin to Etowah, 165 miles. Steel is not very heavy, averaging only 100-pound, but maintenance is top-notch. Doubtless heavier rail will come when supplies permit.

The terrain traversed is exceedingly rough and picturesque. There are deep gorges, primitive backwoods country, beautiful blue-grass regions and——

But here's the all-aboard call. Our 1960 swings us into Kentucky over the massive C&O Ohio River bridge, 1575 feet long and 160 feet above the pier bottoms in the river. A quick stop at Covington, and then we're into the Covington Tunnel, the first of 25 bores between here and

Leonard McLean, Box 1608, Georgia Tech., Atlanta, Ga.

Richard E. Prince.

Southland train numbers are confusing on the Central of Georgia. Southbound, it is No. 32 from Atlanta to Macon, No. 33 from Macon to Albany. Northbound, the numbers are reversed: 32 from Albany to Macon, 33 from Macon to Atlanta. This is because of the usual railroad practice of giving even numbers to trains traveling north and east, and odd numbers to trains traveling south and west. Refer to the map on page 28. Northbound 33↑ approaches Atlanta.

Atlanta. At Latonia we veer off to the south as the single-track Louisville-New Orleans line swings to the right.

For the next 90 miles we'll wind in wide sweeping curves through the Licking River valley. Right now we're only 10 miles out of Cincinnati but we're already deep in primitive backwoods country. This is the famous hill-billy region of Kentucky where the prototypes of the famous Old Zeke cartoons can actually be seen sitting on the "stoops" of log cabins that cling to the high hillsides. When this line was first built, back in 1856, considerable trouble was experienced with these natives, who delighted in taking pot shots at the construction crews. They are more hospitable today, but they can still hit a squirrel in the eye at 200 yards.

Our view is blacked out as we rush into Grant's Tunnel, 12 miles out. On the southbound main it is 2147 feet long, although on the northbound main it is only 2102 feet in length. All along the line we'll notice that many of the tunnels consist of two bores. The second ones were put through when the line was double-tracked between 1910 and 1928.

Double-tracking came when the fabulous amount of the eastern Kentucky coal deposits became fully known. As early as the Civil War, the L&N knew that considerable coal lay in eastern Kentucky, and it built a line from Louisville through Lebanon and to Jellico to reach it. Further exploration showed that the deposits were far more extensive than previously realized, and this influenced the L&N to acquire a direct line to Cincinnati to provide efficient egress for the coal to the industrial cities of the Middle West.

Today these fields are reached by three extensive and heavily built L&N branches. The one from Corbin to Harlan and Lynch is double track as far as Baxter. No L&N map of these lines is ever completely up to the minute, because tracks are being removed and rebuilt to tap new mines all the time. They're all constructed to carry the heaviest L&N power. All morning long we'll pass solid coal trains, running northward, powered by standard Mikados or the specially designed M-1's, the type that is pulling our *Southland*.

Now we notice that the log cabins, the clay roads and the general hill-billy appearance have gone. We see fine country estates, surrounded by spreading pastures enclosed in white painted fences. We're coming into the blue grass region of Kentucky, of which Paris is the gateway. Here, life is actually lived in the leisurely and gracious manner that is so often attributed to the South but just as often actually isn't true.

After a stop at Paris to take on some horse breeders from the Frankfort & Cincinnati Railroad motor train, we're on our way again through the blue grass to Winchester, a little city of unusually restful charm. Here the long branch line to Fleming and McRoberts cuts off toward the mountains in the southeast, dimly seen through the Kentucky haze. This line cuts into the Kentucky mountain country where the Hatfields and the McCoys actually did their feudin'—and still do, to some extent, as anyone who spends a Saturday night at the county seat of Jackson will soon learn.

A ride down this line will take you through the genuine backwoods of America and is very much worth while. But you had better let the other fellow talk first when you approach him. They don't like revenue agents down there.

The blasting exhaust of our 1960 reaches back to our car. We're climbing the ruling grade between Cincinnati and Atlanta, 1.18 per cent for 3200 feet. Before the advent of the M-1's, all through passenger trains had to be double-headed over the entire division, but our 1960 takes us over with only a slight reduction in speed. She's never really out of breath.

At Corbin, where we have a 10-minute stop, we drop the 1960 and take on a standard Mountain locomotive, No. 410, which will carry us all the way to Atlanta. While our most spectacular mountain scenery is still ahead of us, the going is much easier as far as grades on the railroad are concerned. The 410 will do the job easily.

We're out of Corbin now, on single-track for the first time today. Twenty-two miles south we enter Clear Fork River gorge, a wedge in the mountain barrier cut by the stream straining against it for a million years. Here, for 15 miles, is a scenic railroad layout not to be found many places east of the Rockies. The gorge is narrow and reminds us of the Rio Grande's Royal Gorge in miniature.

Our track clings to the riverbank with the perpendicular cliffs

towering straight above us and with short tunnels cutting through the rocks at frequent intervals. Some of the bores have 10-degree reverse curves. Our track is protected from falling rocks by slide-detector fences connected with the automatic signals so as to register "stop" if a rock or other obstruction crashes through the fence. A speed restriction of 35 miles an hour is in effect through the gorge.

Just as we finish a typically fine lunch in the L&N dining car we back into the Knoxville station, about a mile from the present main line. We have 10 minutes here and we consider climbing the long row of steps to the street level. We decide against it, however, and content ourselves with pondering how anyone could design anything as incredibly ugly as the standard gay nineties architecture, of which this station is a hideous example.

We're out of Knoxville at 2:40 p.m. We cross the Tennessee River on a high bridge, built to clear the river steamers. This is the head of navigation, many hundreds of miles from the river mouth near Paducah, Ky. We run parallel to the river for some miles and then swing southward toward Etowah, junction point of the famous Blue Ridge line previously mentioned. That line is undoubtedly one of the most scenic in the East, but it's definitely not for today's heavy mainline traffic. Our *Southland* continues along the newer low-grade road to Junta Tower, near Cartersville, from where we run on tracks of the Nashville, Chattanooga & St. Louis Railway into Atlanta.

At 8:25 p.m. our cars are strung out along the curved train-shed tracks of the Atlanta Union Station, owned by the State of Georgia and leased to the NC&StL, which, in turn, leases its facilities to the L&N as a tenant.

An L&N switch crew pulls our Pullmans and dining car out of the station to the Central of Georgia junction, and then we're pushed into Terminal Station and coupled up with the coach section that's waiting there. A local Atlanta-to-Tampa Pullman is added, along with the Chicago Pullman that has come down via C&EI and NC&StL. From here on the *South-*

Central of Georgia.

Central of Georgia's Macon West Yard↑ is made up of three smaller yards known as the 300, 400 and 500 yards. This photograph, looking east, shows parts of all three. The main line is at far right; the open track down the middle is the 300 yard lead. The 400 and 500 yards are to the left of the caboose track. 300 is exclusively a departure yard; 400, receiving and departure; 500, classification. During peak seasons more than 2200 cars are handled into and out of Macon West Yard every 24 hours. The Southland↙ pulls into the station at Tampa at 11:15 o'clock the second morning out of Chicago.

M. B. Cooke.

H. R. Griffiths, Box 1162, Boise, Ida.

After the Nevada Copper Belt Railway abandoned service March 24, Virginia & Truckee purchased this trim Consolidation, shown handling a southbound mixed train up a heavy grade↑ near Washoe, Nev., and rolling along a Carson City Street↓.

H. R. Griffiths.

Dave Lewis, 102 Cortland, Peoria 5, Ill.

Montrose, Colo., is end of narrow gauge on the Denver & Rio Grande Western from Ouray and the Marshall Pass route. Here a standard-gauge locomotive switches narrow-gauge cars on three-rail tracks. Standard-gauge flat car is an "idler."

Dave Lewis.

John F. Horan, 2090 S. Columbine, Denver 10, Colo.

Members of the National Railway Historical Society and other fans inspect the City Lines of West Virginia↑. This line from Clarksburg to Weston was once part of the extensive Monongahela West Penn. Notice whistle post with bars calling for "To-o-ot, to-o-ot, toot, toot." Well-kept line car→ of the South Shore Line was once No. 376 of the now-abandoned Indiana Railroad.

G. R. Boeddener, 19832 Roslyn Dr., Cleveland 16, O.

The Jamestown, Westfield & Northwestern Railroad is an electric line running 32.2 miles from Jamestown to the New York Central station at Westfield, N. Y. Besides running passenger schedules to connect conveniently with NYC trains at Westfield, the line handles freight interchange from NYC at Westfield, from Pennsylvania Railroad at Mayville, and from Erie at Jamestown. The road was sold to a salvage company in 1945, but is still operated. Car 302↑ is on the loop at Jamestown.

John F. Horan.

The Conquest of the Rockies

Railways conquered the Appalachians and united the East with the Midwest. Then they tackled the formidable Continental Divide

BY RALPH BUDD
President, Chicago, Burlington & Quincy RR.

Originally prepared and delivered as an annual address to the Newcomen Society.

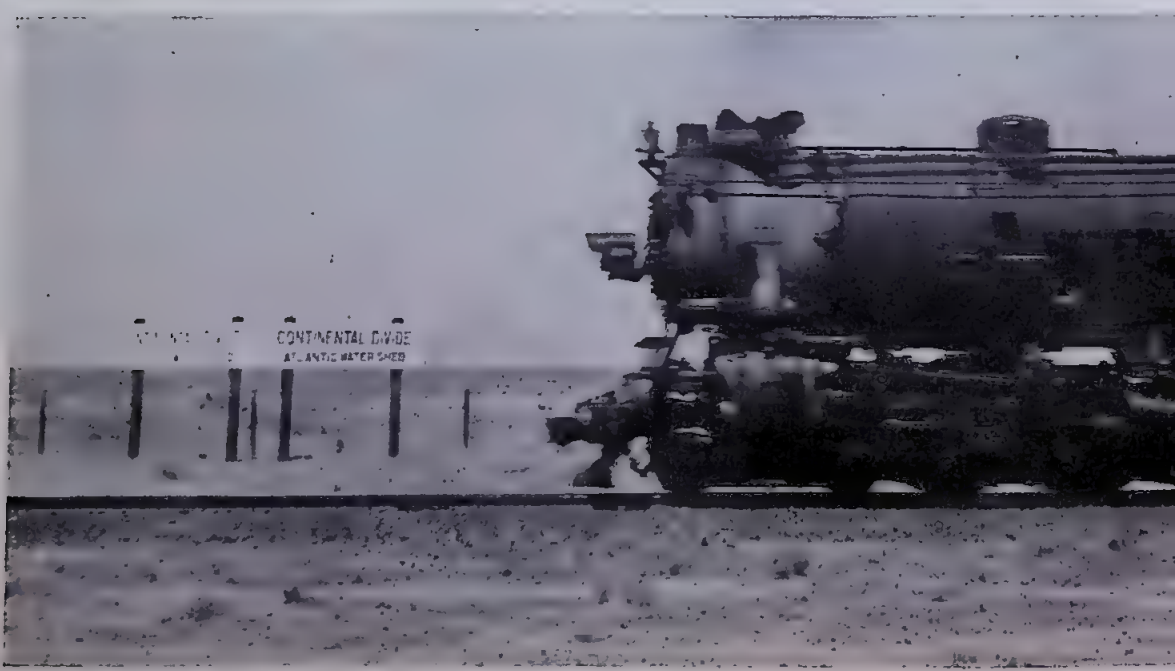
Very soon after the birth of the United States the pioneers in the Mississippi and Ohio valleys found it much easier to do business with foreign countries than to trade with firms on the eastern seaboard. This was because the navigable rivers flowed to the Gulf, while the barrier of the Appalachian mountain system was very difficult to cross. The Easterners extended every effort to reach west across the mountains. At first trails, then roads and canals, were built westward through the gaps and tributary valleys.

In the eventful decade of the 1820's, rails and the steam-driven vehicle appeared. By 1838, only 109 years ago, railroads had so far demonstrated their superiority for transporting people and goods that Congress discontinued appropriations for the national highway, the Cumberland Road, after the construction had reached about to Vandalia, then the capital of Illinois.

The railroads had proved their ability to surmount the Appalachians, and their potentialities fired the enthusiasm of expansionists absorbed with the Oregon question. Under the treaty of joint occupancy with Great Britain, nationals of both countries were settling in Old Oregon, and these people eventually determined for themselves their choice of allegiance. California and New Mexico still belonged to Mexico, so the uttermost western boundary of the United States 100 years ago was the Rocky Mountains. But that barrier was so formidable that gravest doubts were entertained as to the practicability of crossing it except on foot or by pack horse.

The importance of knowing more about the territory beyond the mountains was obvious at the time of the Louisiana Purchase, so President Jefferson extended the investigations to the Pacific, and authorized what became the brilliantly successful Lewis and Clark expedition of 1804-1806 — one of the outstanding examples of simon-pure official exploration.

Missionaries, trappers, traders, hunters, explorers, and immigrants made many trips through the Rockies at various places during the first half of the 19th century, and their journals and narratives are filled with information of the country. William H. Ashley reported in 1825 that wagons could be taken across, and in 1827 he sent a piece of



Southern Pacific's Sunset Route crosses the Divide on level ground.

mounted artillery to Great Salt Lake. But I believe the first to assert positively from personal observation that a railway could be built across the mountains was Samuel Parker, a Presbyterian minister, who went out over the Oregon Trail in 1835.

Marcus Whitman was in Parker's party and turned back at about the Continental Divide. The next year he led a party of his own and took a wagon as far as Fort Boise, thus demonstrating that the mountains could be negotiated by wheeled vehicles. These two preachers, Samuel Parker and Marcus Whitman, insisted more than 100 years ago that the route was practicable for a road rather than a mere trail.

Although many promotion schemes appeared, the distinction of presenting a complete plan for a transcontinental railway belongs to Asa Whitney. As early as 1844 he was pressing vigorously for an Act of Congress to authorize and assist such a project. John C. Fremont in 1842-1844 reported feasible routes to the Columbia, but not necessarily for railways. The traditional idea that high mountain ranges constitute natural frontiers was very deep-seated and persistent. This is shown by the fact that notwithstanding the many reports that had been circulated and even notwithstanding the extensive emigration that had taken place, Daniel Webster in an address as late as 1845 said:

"Where is Oregon? On the shores of the Pacific, three thousand miles from us and twice as far from England. Who is to settle it? Americans, mainly, some settlers undoubtedly from England, but all Anglo-Saxons; all men educated in nations of independent government and all self-dependent. And now let me ask if there be any sensible men in the whole United States who will say for a moment that when fifty or a hundred thousand persons of this description shall find themselves on the shores of the Pacific Ocean they will long be content to be under the rule of either the American Congress or the British Parliament? They will raise a standard for themselves and they ought to do it. . . .

"I believe that it is in the course of Providence and of human destiny that a great state is to arise, of English and American descent, whose power will be established over the country and the shores of the Pacific . . . so there will exist at the mouth of the Columbia, or more probably farther south, a great Pacific republic, a nation where our children may go for a residence . . . forming an integral part of a new government halfway between England and China."

Southern Pacific.

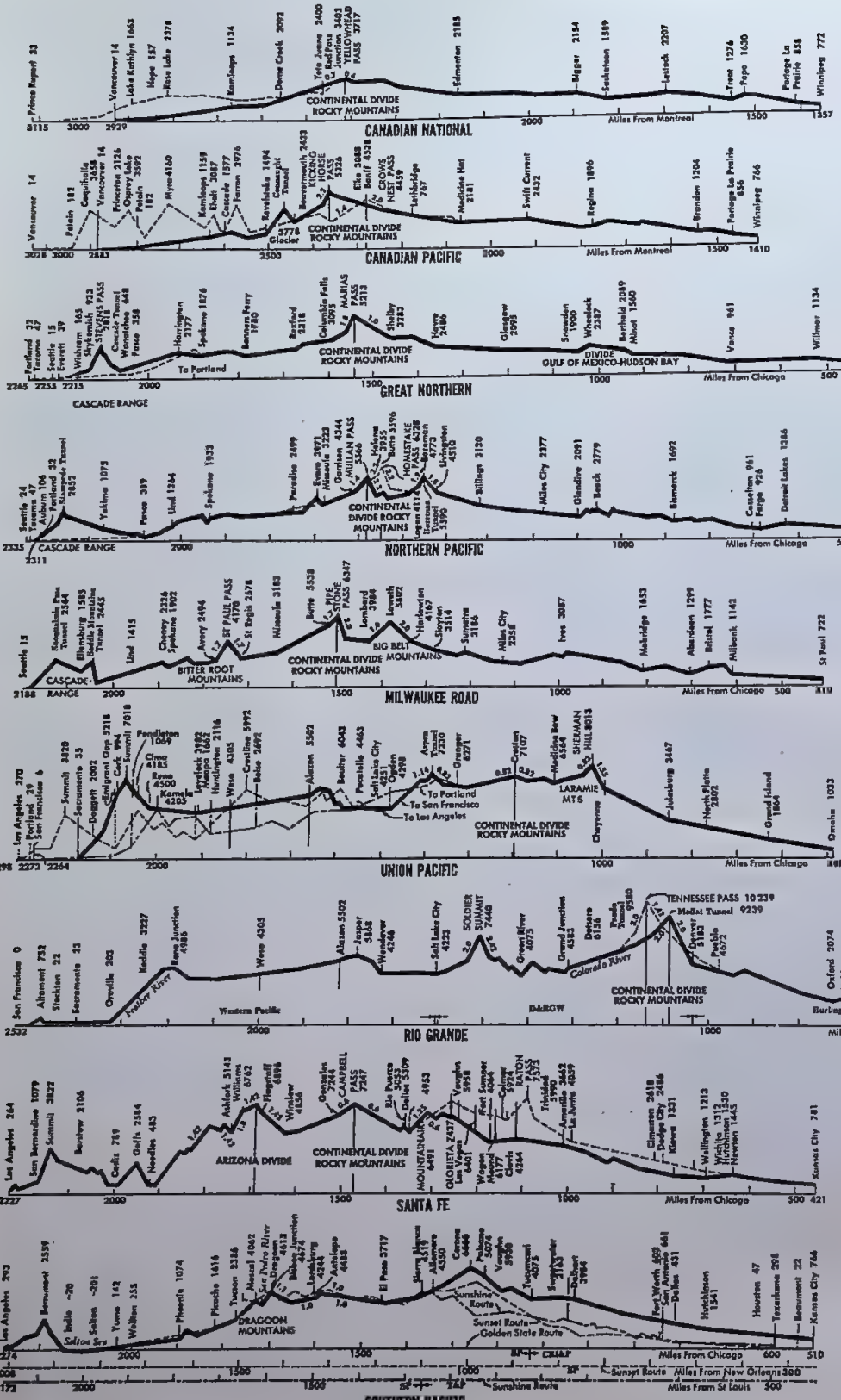
Already, in 1843, the people of Oregon in the memorable Champoeg election had chosen to organize a settlers' provisional government, a first step toward the formal creation of Oregon Territory under the Stars and Stripes. Two years later Texas joined the Union; California and New Mexico were annexed early in 1848, rounding out our continental expansion except for Alaska and the Gadsden Purchase. Thus transcontinental railways became a prime national necessity in addition to their importance as trade routes between Europe and the Orient. Overcoming the obstacle of the Great Range by throwing a railroad across it was a topic of common debate and almost universal consideration.

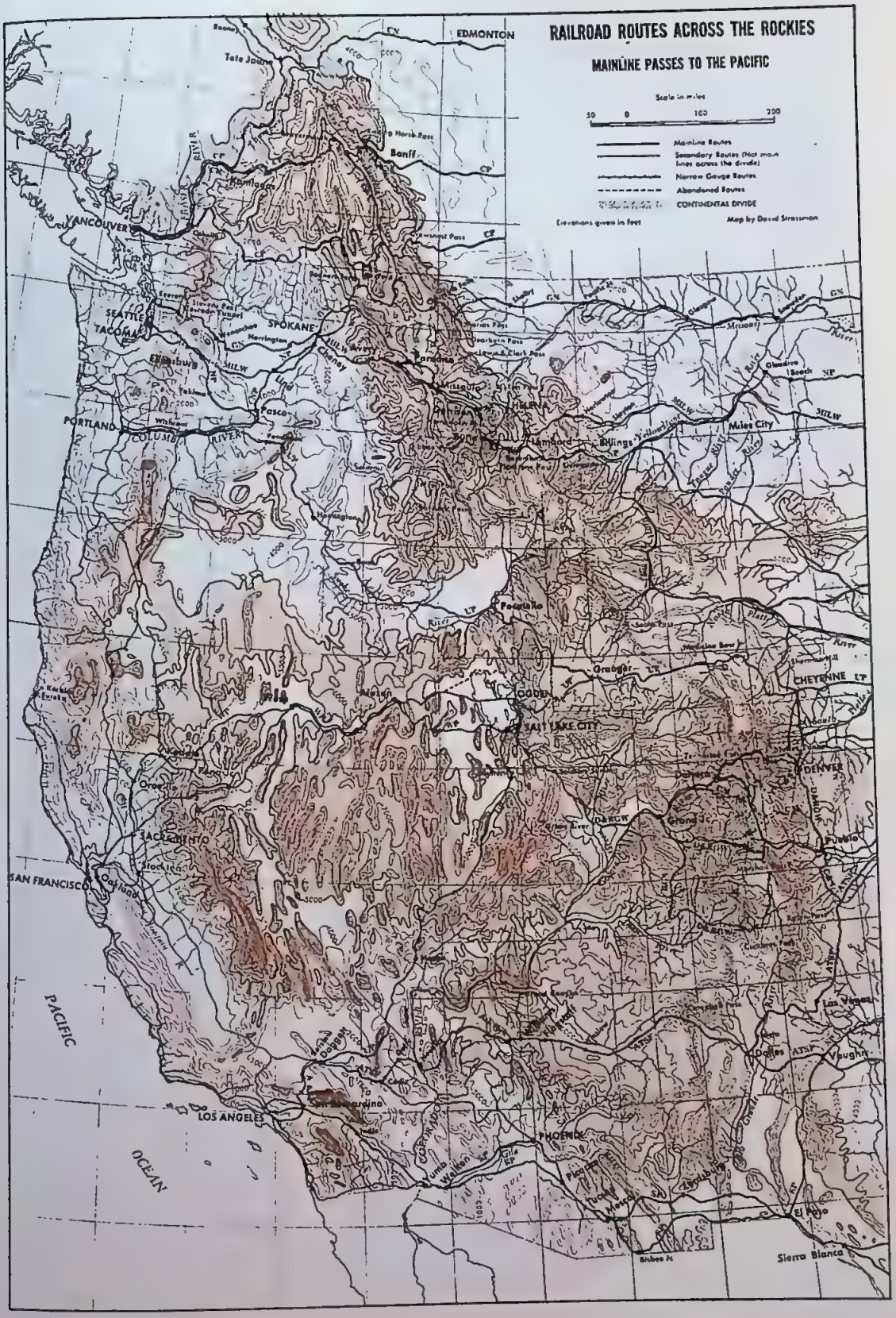
Of course, it was well known that there were other mountains lying between the crest of the Rockies and the Pacific — indeed that the entire Pacific slope was more or less mountainous. But the idea of conquering the Continental Divide which separtes the waters of the two oceans captured the imagination of the people, and the Divide stood in their minds as the basic barrier between the East and the Far West. The existence and location of most of the Rocky Mountain passes had been reported quite reliably by those who had used them from the time of Lewis and Clark, but this knowledge needed to be officially verified, classified, and correlated. A systematic survey was necessary to determine the accessibility of the various passes, the regions through which the natural approaches to them led, and the directness or circuity of such means of approach from the standpoint of distance between important cities.

The general structure of the Rocky Mountains from the Mexican boundary northwesterly to Yellowhead Pass in Canada, a distance of 1500 miles, is that of a continuous cordillera, with four regions of relatively low altitude. Four typical passes, one in each of these regions, may be mentioned. The one in New Mexico (altitude 4500 feet), given the poetic name of Florida on early maps, is where the tributaries of the Rio Grande and the Gila head quite near to each other on opposite sides of the Divide. Two of the passes — Mullan (altitude 5566 feet) and Marias (altitude 5213 feet) are in Montana. At both of them the headwaters of Missouri River tributaries rise in the mountains only a short distance from those of the Columbia. The fourth is Yellowhead Pass at Jasper Park, Canada (altitude 3717 feet). The westward-flowing Fraser and the eastward-flowing Athabasca have their sources in Yellowhead, and the Continental Divide is lower there than in any other pass with which we are concerned.

Between the four relatively low regions just mentioned are the broadest and highest parts of the Rocky Mountain system. These high areas are marked by such well-known features as Grand Canyon National Park, Rocky Mountain National Park, Yellowstone National Park, Glacier National Park, and the famed Canadian Rockies.

It was known that some excellent routes across the moun-


CANADIAN NATIONAL
CONTINENTAL DIVIDE ROCKY MOUNTAINS
Miles From Montreal
CANADIAN PACIFIC
CONTINENTAL DIVIDE ROCKY MOUNTAINS
Miles From Montreal
GREAT NORTHERN
CASCADE RANGE
CONTINENTAL DIVIDE ROCKY MOUNTAINS
To Portland
DIVIDE
GULF OF MEXICO-HUDSON BAY
Miles From Chicago
NORTHERN PACIFIC
CASCADE RANGE
CONTINENTAL DIVIDE ROCKY MOUNTAINS
Miles From Chicago
MILWAUKEE ROAD
CASCADE RANGE
BITTER ROOT MOUNTAINS
CONTINENTAL DIVIDE ROCKY MOUNTAINS
BIG BELT MOUNTAINS
Miles From Chicago
UNION PACIFIC
To Portland
To San Francisco
To Los Angeles
CONTINENTAL DIVIDE ROCKY MOUNTAINS
LARAMIE MTS
Miles From Chicago
RIO GRANDE
Western Pacific
D&RGW
CONTINENTAL DIVIDE ROCKY MOUNTAINS
Miles From Chicago
SANTA FE
ARIZONA DIVIDE
CONTINENTAL DIVIDE ROCKY MOUNTAINS
Miles From Chicago
SOUTHERN PACIFIC
DRAGOON MOUNTAINS
Sunshine Route
Sunset Route
Golden State Route
Sunset Route Miles From New Orleans
Sunshine Route
Miles From St Louis


RAILROAD ROUTES ACROSS THE ROCKIES
MAINLINE PASSES TO THE PACIFIC
Scale in miles
50 0 100 200
Mainline Routes
Secondary Routes (Not main lines across the divide)
Narrow Gauge Routes
Abandoned Routes
CONTINENTAL DIVIDE
Elevations given in feet
Map by David Strassman
EDMONTON
Tete Jaune
Banff
Kamloops
VANCOUVER
SEATTLE
TACOMA
SPOKANE
Chinook Pass
Snoqualmie Pass
Stevens Pass
Wenatchee
Chelan
Ellensburg
Yakima
Pasco
PORTLAND
COLUMBIA RIVER
Whitefish
Marias Pass
Logan Pass
Gibbon Pass
Lewis & Clark Pass
Missoula
Helena
Bozeman
Livingston
Billings
Lombard
Miles City
Glendive
Beach
Missouri River
Yellowstone River
Tongue River
Powder River
Pocatello
Granger
Ogden
Salt Lake City
Provo
Green River
Grand Jct.
Pueblo
Denver
Cheyenne
Sacramento
Stockton
Oakland
San Francisco
Los Angeles
San Bernardino
Yuma
Phoenix
Tucson
Douglas
El Paso
Sierra Blanca
Las Vegas
Vaughn
Pacific Ocean

F. L. Jaques, 610 W. 116th St., New York 27, N. Y.

Canadian Pacific travelers enjoy this beautiful mountain scenery as their train pulls into Banff, Alta., in the Bow River valley. This is on the CPR main line a few miles east of the summit of Kicking Horse Pass on the Continental Divide.

tains were to be found in these high areas. Although they surmount the Continental Divide at higher altitudes, their advantageous approaches in some instances compensate for the greater rise and fall. For example, the route through South Pass in Wyoming was one of the best known of all. It had been followed more or less precisely in the autumn of 1812 by returning Astorians under the leadership of Robert Stuart, who thereby blazed the way which later became the renowned Oregon Trail. Thereafter innumerable traders, as well as hosts of Mormons, Oregon emigrants, and California Forty-Niners, used South Pass.

In the great clamor for transcontinental railways there were the sharpest of partisan disagreements. Southerners advocated strongly some route or routes from St. Louis, Memphis, or New Orleans; others pressed with equal enthusiasm for a northern route; still others advocated a central route via South Pass, about which more was known than the others since it was traveled so much.

The agitation concerning western railway projects culminated in an act of Congress, passed early in 1853, authorizing and directing the Secretary of War to undertake the Pacific Railroad Surveys to determine the feasible routes from the Mississippi to the Pacific. This achievement may be credited chiefly to Senators Gwin of California, Rusk of Texas, Borland of Arkansas, Bell of Tennessee, Chase of Ohio, Seward of New York, Dodge of Iowa, Douglas of Illinois, and a few others who put national necessity above personal prejudice. Jefferson Davis was Secretary of War and, solely because the scope of the work fell within the duties of that position, he carried out the instructions of Congress. Some acts of his savor of sectionalism — for example, his exaggeration of the difficulties of winter operation in the north, and his peremptory orders to curtail explorations under Isaac Stevens at a critical time. I think I should not have mentioned this except for a biography of Jefferson Davis wherein undue credit is given to him for carrying out these surveys as well as their conception.

The surveys were begun in the spring of 1853, completed promptly, and reported in 13 large volumes of the *Congressional Record* in 1855. I feel that this report constitutes the most important source material on the West ever published. The Secretary of War, referring to the instructions given Army officers in charge, said:

"They were directed to observe and note all the objects and phenomena which have an immediate or remote bearing upon the railway, or which might seem to develop the resources, peculiarities, and climate of the country; to determine geographical positions, obtain the topography, observe the meteorology, including the data for barometric profiles. . . . They were to make a geological survey of the lines; to collect information upon, and specimens of, the botany and zoology of the country; and to obtain statistics of the Indian tribes which are found in the regions traversed. Thus would be obtained all the information for the general consideration of the question, as well as the data upon which the cost of construction and working a railroad depends."

The work of the Pacific Railroad Survey parties was so monumental that the personnel of those in charge is worthy of note. They were Army engineers, nearly all of whom later were engaged in the Civil War on the side of the Union. The region assigned to the southern en-

gineers was between the 32nd and 38th parallels of latitude and was under the direction of Maj. William H. Emory. The region next to the north, between the 38th and 41st parallels, was under the direction of Capt. J. W. Gunnison, assisted by Capt. E. G. Beckwith. Before their task was completed, Capt. Gunnison and seven of his party were attacked and killed by a band of Ute Indians, and Capt. Beckwith completed the survey. The northern region between the 45th and 49th parallels was under the direction of Maj. Isaac I. Stevens, who was also governor of the newly created Washington Territory.

After the Pacific Railroad reports were published in 1855, anyone who had the desire and diligence to go through them could gain a very fair idea of where and how the great Rocky Mountain barrier could be approached and crossed by railroad lines within the United States. There was one notable exception, the legendary Marias Pass which Governor Stevens heard about from the Blackfoot chief, Little Dog, but which he was unable to locate within the time limit and expense account which the impatient Jefferson Davis allowed him.

If sectional rivalry tended to confusion as to the merits of the various routes, it also resulted in the exercise of great thoroughness on the part of the engineering forces. Weather and meteorology were carefully recorded, especially in the north, and practicability of winter operation was stressed. The importance of favorable approaches to the passes was recognized and pointed out.

A remarkably able and complete treatise on the subject of railway construction and operation is contained in Volume I under the caption "Memoranda on Railways" by Capt. George B. McClellan. It contains extensive data on contemporary railways and formulas for determining locomotive tonnage ratings for various grades, as well as a discussion of allowable curvature. The Baltimore & Ohio grade of 116 feet per mile is cited, and it is significant that the Land Grant Acts of 1862 and later years provide that "the grades and curves shall not exceed the grades and curves of the Baltimore & Ohio Railroad." Thus originated the 2.2 per cent grade, which became a common maximum in our western mountains.

In 1869 the first rails were connected across continental America when the Union Pacific and Central Pacific tracks met at Promontory Summit, near the north shore of Great Salt Lake. Other lines followed, to the north and to the south, and soon the railways were carrying the settlers to the intermountain and Pacific slope country as they had carried them over the Alleghenies and into the Middle West a generation or two earlier.

In crossing the Divide the railroads followed generally routes covered by the Pacific Railroad Reports. It is interesting here to consider some of the characteristics of the railroad lines which use the passes of the Rocky Mountains at the present time.

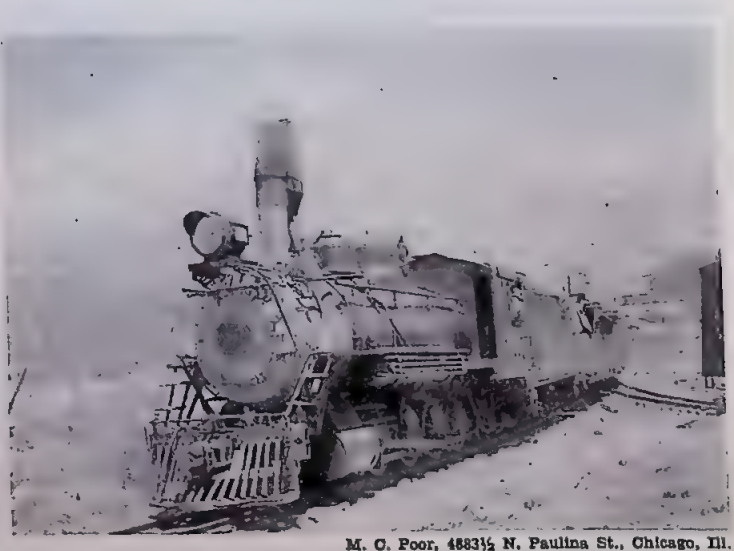
The Southern Pacific has the lowest Continental Divide summit in the United States, but, like some of the other Rocky Mountain crossings, the elevations at widely distant points east and west of the Divide itself are higher than the summit which separates the waters of the two oceans. El Paso, focal point of travel since 1598, is the most southerly gateway. Here the Sunset Route from New Orleans and Houston, the Sunshine Route from St. Louis, Dallas and Fort Worth, and the Golden State Route from Chicago and Kansas City converge from the east and then follow the alternative paths of Southern Pacific Railway west across the Continental Divide.

Of these two alternatives the first, completed in 1883, follows up Rio Grande drainage on a grade of 1.0 per cent, crosses the Divide in the open about 30 miles east of Lordsburg, N. Mex., at an elevation of 4584 feet, and descends the west slope on a 1.0 per cent grade in Gila River drainage. About 90 miles west of Lordsburg is Dragoon Summit, at 4613 feet, with a 1.1 per cent grade on its east slope and a 1.4 per cent grade on its west slope leading down to the San Pedro River. There is also a 1.4 per cent ascending grade westward from the San Pedro to Mescal.

The other line, about 20 miles to the south of the first, was built in 1902 as the El Paso & Southwestern. It ascends westward from the Rio Grande on a grade of 1.0 per cent, crosses the Divide in the open at 4700 feet near Hachita, N. Mex., and descends on a 1.0 per cent grade in the drainage of the Gila.

About 300 miles still farther east the Sunset, Sunshine, and Golden State routes attain altitudes of 5074, 4550, and 6724 feet, respectively.

From El Paso westerly for 560 miles, both Southern Pacific lines run the length of the Gadsden



The Colorado & Southern (part of the Burlington system) no longer crosses the Divide, yet a remnant reaches higher than any other standard steam railroad in the United States at Climax→, altitude 11,319 feet. The railroad is now standard gauge, but in this 1937 photo it was narrow gauge.

M. C. Poor, 4883½ N. Paulina St., Chicago, Ill.

Southern Pacific.

Southern Pacific's gateway to the Continental Divide is at El Paso, Tex. Here three important routes from the east converge to funnel through either of two routes across the Divide. One crossing is made near Lordsburg, N. Mex., and the other near Hachita, N. Mex., about 20 miles southeast of Lordsburg. A coal-burning articulated locomotive↑ swings eastward across west Texas from El Paso. Eastbound Santa Fe freight↓ crosses the Divide at Campbell Pass.

R. H. Jahns, U. S. Geological Survey, Washington, D. C.

Purchase of 1853. This purchase, which settled the Mexican boundary question, was made largely because of the knowledge that the important passes to which El Paso is the eastern gateway lay within the disputed area. James Gadsden, who as minister to Mexico negotiated the purchase, had been president of the South Carolina Railroad and was an ardent advocate of a "railway to the Pacific along the southern frontier" through the passes at the headwaters of the Gila.

About 250 miles to the north is the famous route of the Atchison, Topeka & Santa Fe Railway. It follows up Rio Grande and Rio San Jose drainage on a 0.6 per cent grade and crosses the Continental Divide in the open at Campbell Pass, elevation 7244 feet, at Gonzales, N. Mex. Then it descends in Rio Puerco-Colorado River drainage on a 0.6 per cent grade.

Here again the Continental Divide is not the highest point of the Rocky Mountain crossing. There is a 7310-foot summit 200 miles west of Campbell Pass where the line crosses the Arizona Divide near Flagstaff, with 1.42 per cent grades from both directions except for a few miles of 1.8 per cent on the west slope.

The Santa Fe was completed from Kansas City to the coast in 1884. It now has two lines from the east which join about 100 miles east of Campbell Pass. The northerly route follows the Old Santa Fe Trail via Raton and Glorieta passes in spurs of the main range. These passes are 7573 and 7437 feet above sea level. Maximum grade, at Raton, is 3.5 per cent.

The southerly route, via Clovis, N. Mex., crosses a ridge between the Pecos and Rio Grande near Mountainair, 6491 feet, using a 0.6 per cent grade on the eastern slope, and a 1.25 per cent grade on the western slope. Heavy through freight traffic moves over this line; passenger traffic goes mostly via Raton and Glorieta.

Next to the north are the two routes of the Denver & Rio Grande Western Railroad in high and rugged parts of the Rockies. The first follows up the valley of the Arkansas River from Pueblo through the Royal Gorge on a grade of 1.42 per cent. It crosses the Divide beyond Leadville through Tennessee Pass tunnel, elevation 10,239 feet. Then it follows the Eagle River on a grade of 3.0 per cent to the Colorado.

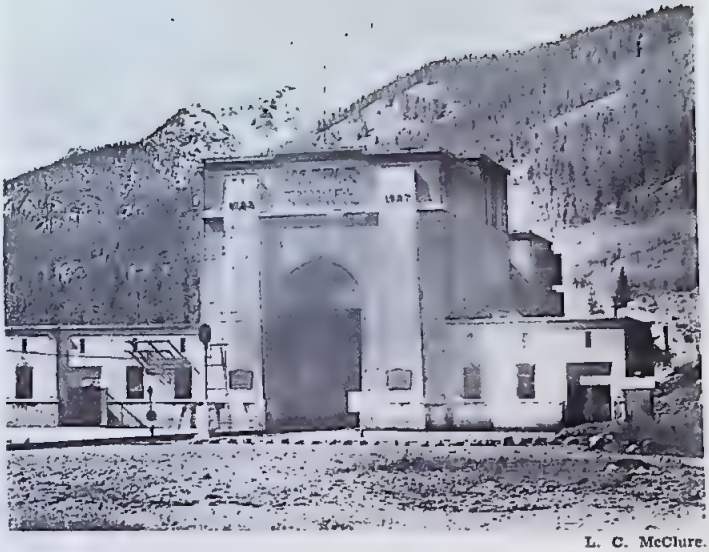
The second route follows up Ralston and Boulder creeks on a 2.0 per cent grade from the South Platte River at Denver, crossing the Divide through the Moffat Tunnel at 9239 feet. It drops down to the Colorado River on a 2.0 per cent grade. This line connects with the Tennessee Pass line at Dotsero by means of a 40-mile link built in 1934 along the Colorado River from Bond (Orestod), thereby forming what probably is the last transcontinental route across the Rockies.

Moffat Tunnel is the farthest east of all the crossings of the Continental Divide, and its eastern approach leads directly from the great prairies of eastern Colorado, Nebraska, and Kansas. The Wasatch Range, which lies between the Colorado River and Great Salt Lake, is crossed by the Denver & Rio Grande Western 400 miles west of Moffat

Tunnel at Soldier Summit, elevation 7440 feet, using a 2.0 per cent grade on the west slope and a 2.4 per cent grade on the east.

The destiny of a railway seems to have been more nearly or more certainly determined by the Santa Fe's victory over the Denver & Rio Grande in the fight for possession of Raton Pass, in 1878, than in any other such instance in America. The contest did not concern a Continental Divide crossing, but an important pass on a route leading to the Divide. The loss of Raton Pass turned the Denver & Rio Grande from Southwest conquest, perhaps from ultimately reaching into southern California.

The D&RG turned instead to Leadville and other Colorado mining centers in the high Rockies. Eventually it reached Salt Lake City in 1883. This 2300-mile railroad is located wholly in the Rocky Mountain region. At Pueblo and Denver its chief connections are with the Missouri Pacific, Rock Island, and Burlington Lines; at Salt Lake City and Ogden they are with the Western Pacific, Southern Pacific, and Union Pacific railroads.



L. C. McClure.

Denver & Rio Grande Western, like Southern Pacific, crosses the Divide by two separate routes. Moffat Tunnel↑, completed in 1927, makes the crossing at an altitude of 9239 feet and is the route used by Burlington-RGW-Western Pacific transcontinental trains from Chicago to the Pacific Coast. Tennessee Pass Tunnel↓ burrows through the Divide at 10,239 feet and is the highest of all crossings of the Divide. Engine 1517 is followed by 57 cars, two pushers.

J. W. Maxwell, 765 S. Williams St., Denver 9, Colo.

North of the Denver & Rio Grande Western is the Great Central Route known since the early 1800's from reports of trappers, traders, missionaries, Mormons, Oregon Overlanders, and California Forty-Niners. Here the Union Pacific Railway went through a high but favorable and open country to connect in 1869 with the Central Pacific. Later its lines were extended south to southern California and north to the Pacific Northwest, but all the traffic flows, hourglass fashion, through one Rocky Mountain summit at Creston, Wyo., 7107 feet above sea level.

Here the Continental Divide is so wide and open and easy of access that many railways could be built over it without interference. In fact, more than one such project has been launched and surveys made for lines. It was not because of engineering difficulties or physical obstacles that none were undertaken.

Eighty miles to the northwest from Creston is South Pass, at about 7500 feet altitude, long regarded as the most eligible crossing of the Rocky Mountains. It is at the north edge of the extensive Divide plateau, while Creston is at the south edge. No railway ever was built through it, and it seems certain that none ever will be. Considering the extensive use of South Pass by pre-railroad travelers, one cannot help wondering why. An important factor is that the early trails led to the Columbia River, and not to California, because until 1848 California was foreign territory. Oregon, on the other hand, was open to joint occupancy from 1818 until it became a part of the United States. South Pass was on the direct road to Oregon, the Oregon Trail.

When the Union Pacific and Central Pacific railways were built in the late sixties, their western terminus was California, not Oregon, and South Pass was too far north of the direct line to California to justify its use. It was desirable to keep the location as near to Denver as practicable. Denver was then, as it is now, the largest city between

Northern Pacific.

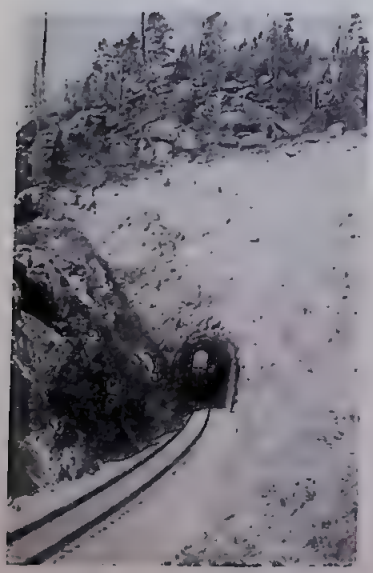
Northern Pacific track emerges from Homestake Tunnel 6328 feet above sea level and borders Silver Bow Valley on the west side of the Divide. This is NP's southern route, built in 1896 to serve Butte, shown in the distance.

Omaha and San Francisco. A very satisfactory route was found through Cheyenne, 110 miles north of Denver. From there a much shorter line than the one through South Pass was available directly to the West, although it does involve high country at Sherman Hill.

When the Oregon Short Line was built to the Columbia River from a junction with the Union Pacific, the logical location for such junction was many miles west of South Pass, leaving it again, and apparently forever, without a railway. The emigrant wagon road had to follow streams as closely as possible, but a railway can go across country. From the North Platte River, near the present city of Casper, the Sweetwater leads directly up to South Pass, where less than a mile separates it from the headwaters of Pacific Creek. This was the path of the pioneers to Great Salt Lake, Oregon, and California.

As in other crossings, the Continental Divide is not the highest point on the Union Pacific. Westward from the plains UP's route is up Lodge Pole Creek in South Platte drainage and over Sherman Hill at 8013 feet. Then, in North Platte drainage, it drops down to the Laramie and follows that stream and the Medicine Bow to a high plateau some 100 miles in width and almost 300 miles in length from east to west. The Continental Divide is in this plateau and is crossed by the railroad at Creston, 7107 feet, with 0.82 per cent grades on both slopes. The drainage to the east flows into the North Platte, and to the west into the Green River.

Crossing Aspen Ridge 200 miles west of Creston at Aspen Tunnel, 7230 feet, between Green River and Great Salt Lake, the grades are 1.14 per cent on the west slope and 0.82 per cent on the east slope. Ascending Sherman Hill, 170 miles east of Creston, the grades are 1.55 per cent on the east slope and 0.82 per cent on the west slope.



Northern Pacific.

Homestake Tunnel is short, but it successfully knocks 136 feet off the peak of NP's southern crossing of the Divide. This is the west end of the bore.

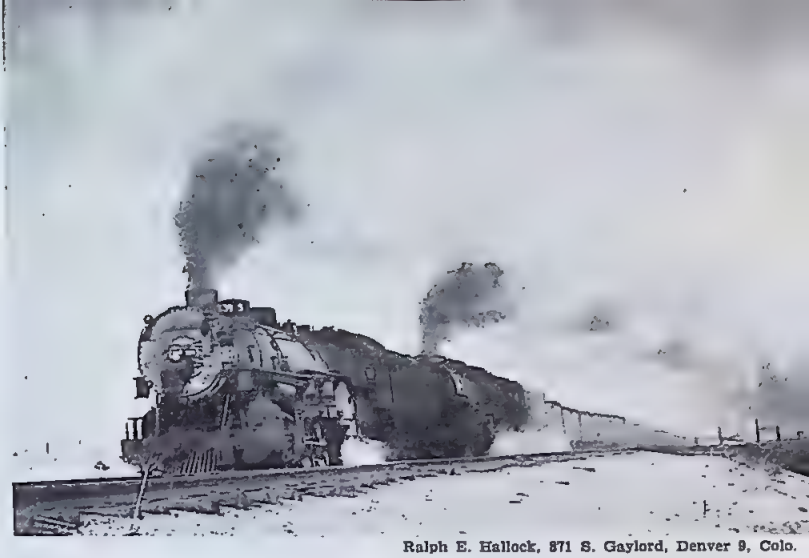
The Northern Pacific Railway was built through Helena in 1883. It followed the Missouri River, then went up Ten-Mile and Seven-Mile creeks on a 2.2 per cent grade and crossed the Divide through a tunnel at Mullan Pass at 5566 feet. (The pass itself is 5856 feet above sea level.) It descended the west slope along the Little Blackfoot River on a 1.4 per cent grade to Clark Fork and eventually reached the valley of the Columbia. Mullan Pass was named for Lieutenant, later Captain, John Mullan, of Gov. Stevens' party. In 1858 and following years he built a military road (known as the Mullan Road) through it, extending 624 miles from Fort Benton on the Upper Missouri to Fort Walla Walla on the Columbia River.

Northern Pacific built its second line through Butte in 1890. This line is south of the original route. It goes up Jefferson River (a tributary of the Missouri) and Pipestone Creek on a 2.2 per cent grade, and crosses the Divide through a tunnel at Homestake Pass, 6328 feet. It descends in the Clark Fork Valley through Butte on a 2.2 per cent grade.

The Mullan Pass tunnel is about 800 feet lower than Homestake Tunnel. It has easier approaches and is used for heavy freight movements. The reason for the Northern Pacific's two lines is that both Helena and Butte are important cities, and each sits by a mountain saddle, Mullan Pass and Homestake Pass respectively.

Northern Pacific crosses the north end of the Gallatin Range in Bozeman Tunnel, 5565 feet above sea level, 100 miles east of Helena. The grade is 1.8 per cent on the east slope and 1.9 per cent on the west slope. This is the Divide between the Yellowstone and Missouri rivers.

During the years 1906 to 1909, the Chicago, Milwaukee & St. Paul Railway built across the Rockies, closely paralleling the Northern Pacific for many miles. It follows up the Missouri and Jefferson rivers and Little Pipestone Creek on a 2.0 per cent grade. The line crosses the Divide through Pipestone Tunnel, elevation 6347 feet, a few miles from Homestake, then goes through



Ralph E. Hallock, 871 S. Gaylord, Denver 9, Colo.

The Continental Divide is not the highest place on the Union Pacific. A higher spot is Sherman Hill, whose 1.55 per cent grade this westbound freight is climbing. Sherman Hill is 8013 feet above sea level; the Divide, 7107 feet.

Butte and down the west slope on a 1.7 per cent grade along Clark Fork. About 125 miles east of the Continental Divide this line crosses the Belt Mountains at an altitude of 5799 feet, with a 1.0 per cent grade on the west slope and a 2.0 per cent grade on the east slope. It crosses the Bitter Root Mountains about 250 miles west of the Continental Divide at 4170 feet, using 1.7 per cent grades in both directions.

Lemhi Pass, on the boundary between Montana and Idaho, 100 miles southwest of Butte, has a history reminiscent of South Pass in that it was the first to be known in the region but was never occupied by a railway. Lemhi was the pass used by Lewis and Clark on their way to the Pacific in 1805. On their return trip in 1806 the party divided; Clark explored the Yellowstone River while Lewis went north to find the headwaters of the Marias. By some quirk, the name Lewis and Clark Pass has been given to the pass north of Helena, which Lewis alone used and Clark never saw, while the pass Clark used and Lewis never saw is called Gibbon. Lemhi, which they both used and which by all the rules should be called Lewis and Clark Pass, has never been so designated.

The erstwhile Gilmore & Pittsburgh Railroad, which may be classed as a frustrated transcontinental line, built near Lemhi Pass but used Bannock Pass instead, a few miles to the south. Elevation at Bannock Pass is 7574 feet. An improved highway does go through Lemhi. South Pass, on the other hand, now is almost inaccessible. Incidentally, South Pass was so named because it lies far to the south of Lemhi and the others which Lewis and Clark discovered. El Paso del Norte, the most southerly of all, received its name because it leads to the north from Mexico.

Between Mullan Pass and the Canadian boundary, a distance of 200 miles, the Pacific Railroad Surveys reported no pass suitable for a railway, although Isaac I. Stevens, who headed the northern party, always thought there was one at the headwaters of the Marias River that had eluded him.

There was documentary evidence that such a pass existed. Robert Greenhow, librarian to the Department of State, in 1840 wrote a pamphlet which was a statement of the United States' claims to Oregon, and no doubt was influential in settling the boundary question. Our interest in this pamphlet, however, is not in its text, but in the map that accompanies it. The map shows very clearly a trail marked "Route Across the Mts." exactly where the Great Northern is now located through Marias Pass.

Diligent search in the archives

First eastbound train through Northern Pacific's new Bozeman Tunnel→ was Extra 5104 East. The tunnel was drilled to obtain larger clearances during World War II. Old tunnel mouth can be seen behind the locomotive. Union Pacific 9001↓, a mammoth 4-12-2, rushes a freight train over the Wyoming plateau just west of the Continental Divide.

R. H. Kindig.

W. R. McGee, 418 No. B, Livingston, M

Great Northern.

Great Northern's highest point is in Marias Pass at the peak of the Continental Divide. This pass was known to exist as early as 1853, but was "lost" until 1889. Then John F. Stevens, reconnaissance engineer for James J. Hill's projected Great Northern, found the pass and proceeded to thread the railroad through it. Diesel-powered freight train is pictured near Summit, Mont., in Marias Pass.

of the State Department and Library of Congress has failed to reveal the sources of information used in making this map, so it only adds to the mystery of the pass. Governor Stevens mentions Marias Pass more than 50 times in his reports, and after he was refused permission to extend his explorations into another year, he wrote a final letter on April 20, 1855, to Secretary of War Davis, calling attention to evidence that such a pass was seen by James Doty of his party, but not explored. He closes this letter as follows: "There is every probability of the existence of a wide, open pass, formerly in extensive use by the Indians, some 20 miles south of the pass explored in 1853 by A. W. Tinkham, Asst. Engineer."

He was right, but no systematic search was made for it until James J. Hill was building the Great Northern Railway through to the Pacific in the late 1880's. Hill's line across eastern Montana lay only 60 miles from Canada, but Helena and Butte were so important that he decided to build from Havre 300 miles southwesterly to those cities, which he did in 1887. At the same time a survey was made for a line to the west through Dearborn Pass, northwest of Helena. But before doing any construction work he investigated every mile of the mountain range northward to the boundary, hoping to find a crossing more directly on his route.

Anxious to push westward with the building, he carried exploration into the winter months. Finally, on December 11, 1889, his reconnaissance engineer found the elusive Marias Pass precisely where Chief Little Dog, 36 years earlier, had told Isaac I. Stevens it would be found. That discovery changed the Great Northern Railway from a circuitous railroad into a very direct transcontinental line, with very favorable grades and alignment on both easterly and westerly approaches.

The Great Northern follows up the Missouri and Milk rivers thence in Marias River drainage, on a 1.0 per cent grade. It crosses the Divide at Marias Pass, without a tunnel, at 5213 feet. The line drops for 14 miles down the west slope on a grade of 1.8 per cent in a defile recently given the official name of John F. Stevens Canyon. Then it follows along the Flathead, Kootenai, and Pend Oreille rivers on 0.7 and 0.8 per cent grades.

In honor of the discovery of Marias Pass, the Great Northern erected a bronze statue of the reconnaissance engineer at the

pass. It represents Stevens as he was when he made the discovery in 1889, garbed for mountain work in winter.

The Great Northern built through Marias Pass in 1891 and reached the Pacific Coast early in 1893. So ended the quest, begun by Meriwether Lewis in 1806, for a pass at the source of the river which he called Maria's "in honor of Miss Maria Wood . . . that lovely fair one."

The United States Railroad Explorations may have stimulated the British Government to secure similar information about railway possibilities in Canada. At any rate, such investigations and reports were made under the direction of Capt. John Palliser during 1857, 1858 and 1859.

Capt. Palliser was an Irish sportsman who already knew the western wilderness and its ways. He had spent the year 1848 in the buffalo country, with principal headquarters at Fort Union, at the confluence of the Yellowstone and Missouri rivers, right where the Great Northern now crosses the North Dakota-Montana boundary. His account of this experience, *Solitary Rambles and Adventures of a Hunter in the Prairies*, was published in 1853. It is one of the most delightful books dealing with the big-game era in America.

Palliser's men left many place names in the Canadian Rockies, among them Kicking Horse River and Kicking Horse Pass. The occasion for this name was an accident to Dr. James Hector, an assistant to Palliser. One of the horses objected to the placing of the pack on its back and severely kicked the doctor.

Three mainline railways cross the Canadian Rockies. The southerly line of the Canadian Pacific, completed in 1898, occupies Crowsnest Pass at 4459 feet. Owing to its close proximity to the United States boundary, and the rugged country to the west, the traffic on this route is relatively light. From the east, it follows up South Saskatchewan River tributaries on a 2.0 per cent grade, crosses the Divide in the open at Crowsnest Pass, and descends the west slope on a 1.4 per cent grade in the drainage of the Kootenai River.

The Canadian Pacific's main transcontinental line, completed in 1886, uses Kicking Horse Pass, altitude 5326 feet. Its course from the east is up the South Saskatchewan, then along Bow River, on a 1.8 per cent grade approaching the Divide, which is crossed in the open at Stephen. The line follows the Kicking Horse River down the west slope on a 2.2 per cent grade. These favorable data give little hint of the rugged character of Canadian Pacific construction. It is in the Selkirks, rather than in the main Rockies, that the greatest engineering feats were performed, although the spiral tunnels which ease the westerly descent from Kicking Horse Pass are spectacular examples of mountain location and construction.

The Canadian National transcontinental line, connected through in 1914, crosses the Divide in the open at Yellowhead Pass, 3717 feet above sea level. The eastern approach to the pass is up the Athabasea River drainage on a 0.4 per cent grade except for a short piece of 0.5 per cent. Down the west slope the line drops on a 0.7 per cent grade in upper Fraser River waters. At Red Pass Junction, 26 miles west of Yellowhead, the line divides. One route goes to Prince Rupert, following the drainage of the Fraser River and then the Nechako, Bulkley, and Skeena rivers to the Pacific. The more important route, to Vancouver, turns south about 46 miles beyond Yellowhead Pass. After following Canoe River a short distance it descends along the North Thompson to Kamloops. From Kamloops the line follows the Thompson River southwesterly to its junction with the Fraser, and goes down that mighty stream to tidewater at New Westminster and Vancouver. This is the easiest railway gradient across the continent. It has only one summit, and that at 3717 feet above the sea, with very favorable approaches from both directions.

Yellowhead was well known to the Canadian Pacific engineers and officials, but for national as well as economic reasons they decided on the Kicking Horse route in order to occupy the more central and productive areas. Something of their courage may be gauged by the fact that they built through Kicking Horse Canyon without knowing how they would get beyond, and while explorations were still under way in the Selkirks.

The portentous meaning of the western railroad movement as it

Linn H. Westcott.

The Milwaukee Road's crossing of the Continental Divide is electrified. The line emerges from Pipestone Tunnel, crosses the Divide at the signpost, then drops westward to Butte, Mont. The westbound grade is 2 per cent.

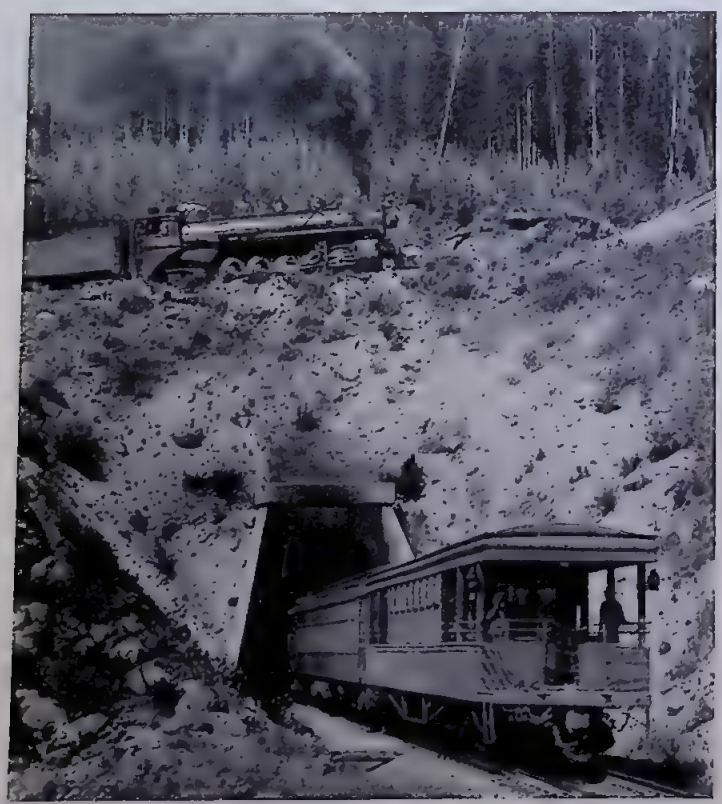
Otto C. Perry, 3 Fox St., Denver, Colo.

Eastbound Milwaukee Road freight train follows motors 10504 and 10213 through Pipestone Pass. The train is approaching the west portal of Pipestone Tunnel (see page 53). New Olympian Hiawatha uses diesel power here.

appeared to the Indians is reflected in the reports of Isaac I. Stevens and John Palliser, who were sincere, honest, and sympathetic friends of the Red Man.

At a meeting between Governor Stevens and a band of Assiniboines, on July 27, 1853, near the center of what is now North Dakota, the Indian chief said: "The Great Father of Life who made us and gave us these lands to live upon, made the buffalo and other game to afford us subsistence; their meat is our only food; with their skins we clothe ourselves and build our houses. They are our only means of life — food, fuel, and clothing. But the buffalo are fast disappearing and before many years will be destroyed. As the white man advances our means of life grow less. We hear that a great road is to be made through our country. We do not know what this is for; we do not understand it, but think it will drive away the buffalo. What are we to do?"

Capt. Palliser reports a similar meeting five years later, south of Lake Winnipeg, when the Cree chief said: "I want you to declare to us truthfully what the great queen of your country intends to do to us when she will take the country from the Fur Company's people. . . . We will not sell or part with our lands. Now, what is to become of us? We have no more animals; they are all gone, and only for the little fish we take we would starve."



Nicholas Morant Photomontage; courtesy Canadian Pacific.

This picture of a Canadian Pacific train passing over itself in spiral tunnel No. 2 is a photographer's clever combination of two photos, but a 99-car train with three engines actually performed this trick on October 21, 1939.

I have enumerated the 13 transcontinental railroad crossings of that "impassable barrier," the Continental Divide, at various locations from the Mexican border to Yellowhead Pass in Western Canada, a distance of about 1500 miles. Many engaging speculations suggest themselves concerning some aspects of these various routes by which main lines of railways cross the Rocky Mountains. One of the singular things is that, using widely separated passes, the distances from Chicago or Toronto (for example) to Pacific Coast points by various lines are so nearly the same. A comparison of train timetables will emphasize this surprising fact.

The practical routes, of course, are governed by important intermediate cities. In choosing a direct itinerary the mountain pass to be used determines the gateway point, and vice versa. For example, whether a traveler from Chicago to Los Angeles will go through Kansas City or Omaha depends upon where the train he patronizes will cross the mountains. Several hundred miles may separate these crossings but the distance traveled and the time required will be nearly the same. Similarly, the routes through the

Twin Cities of St. Paul and Minneapolis, and through Omaha, are practically the same length from Chicago to Portland, Ore., although they may be 500 miles apart where they cross the Rocky Mountains.

If an engineer, in the light of all that is now known about the topography of the West, should decide to lay out the shortest and fastest line possible, it does not seem that he could make much improvement over any one of several direct routes. By ignoring large gateway points a good deal might be done, but in the West we do not have enough population or traffic to justify avoiding our large cities with through travel, as may be done appropriately in the East.

It is notable that in many instances the passes at the Continental Divide are lower than other points both to the east and to the west. This is usually, but not always, occasioned by crossing a ridge or mountain spur to avoid the distance involved in following a tortuous stream to one of its sources at the Divide. The distance of 300 or 400 miles from the high point on the east to that on west, with the Continental Divide between, indicates how enormous is the mass of the Rocky Mountain range.

The maximum grades on the western transcontinental rail lines are quite uniform — especially if the profiles over the Cascades and Sierras are included — generally about 2.0 per cent. Every transcontinental road has been greatly improved both as to line and grade. Unquestionably they will be further improved, but it seems doubtful whether the rise and fall or the ruling gradients by which the various lines now cross the Rockies will be substantially changed. It also seems doubtful that any of the Rocky Mountain passes now occupied by transcontinental railways ever will be abandoned, or that any not now occupied will ever be used by a railway. The search for railway routes across the Rocky Mountains and the competitive struggle for their control is therefore a closed chapter; it remains to perfect the means and methods of operating railroads through them so that the handicap of mountain barriers, once so formidable, may gradually be minimized.

John Cooshet, 904 W. 20th Ave., Vancouver, B. C.

Red Pass Junction↑ is just west of the Canadian National's crossing of the Continental Divide. Train is the 1939 version of the Continental Limited; stucco station is typical of CNR stations throughout Canada. Westbound Canadian Pacific train↓ is in Kicking Horse Valley, just west of the spiral tunnels by means of which CPR crosses the Divide. Road in foreground occupies old railroad right of way which was used before the spiral tunnels were completed in 1908. The old route contains 4 miles of 4.5 per cent grade, comparatively easy for motor traffic but a nightmare to a railroad. The spiral tunnel route eases the grade on the west slope to 2.2 per cent compensated. A "compensated" grade is eased on curves to offset the added friction of the flanges.

F. L. Jaques.

Monument↑ to Casey Jones was dedicated in the presence of↑ (left to right) Charles Jones, Barbara Jones, the Rev. Joseph Cunningham, Mrs. Jane B. Jones, Lucius Beebe, C. M. Clegg, Mayor George Smith, and Sim Webb. Original marker↓.

"Casey Jones Was the Rounder's Name"

Thanks to Clegg and Beebe, he returns to fame

Almost half a century after Casey Jones achieved immortality through the agency of a popular ballad, a bronze and marble memorial was erected over the grave of the legendary locomotive engineer in Mount Calvary Cemetery, Jackson, Tenn. Previously Casey's grave had been identified only by an unpainted wooden cross which had at length rotted away and merely lay on the cemetery grass.

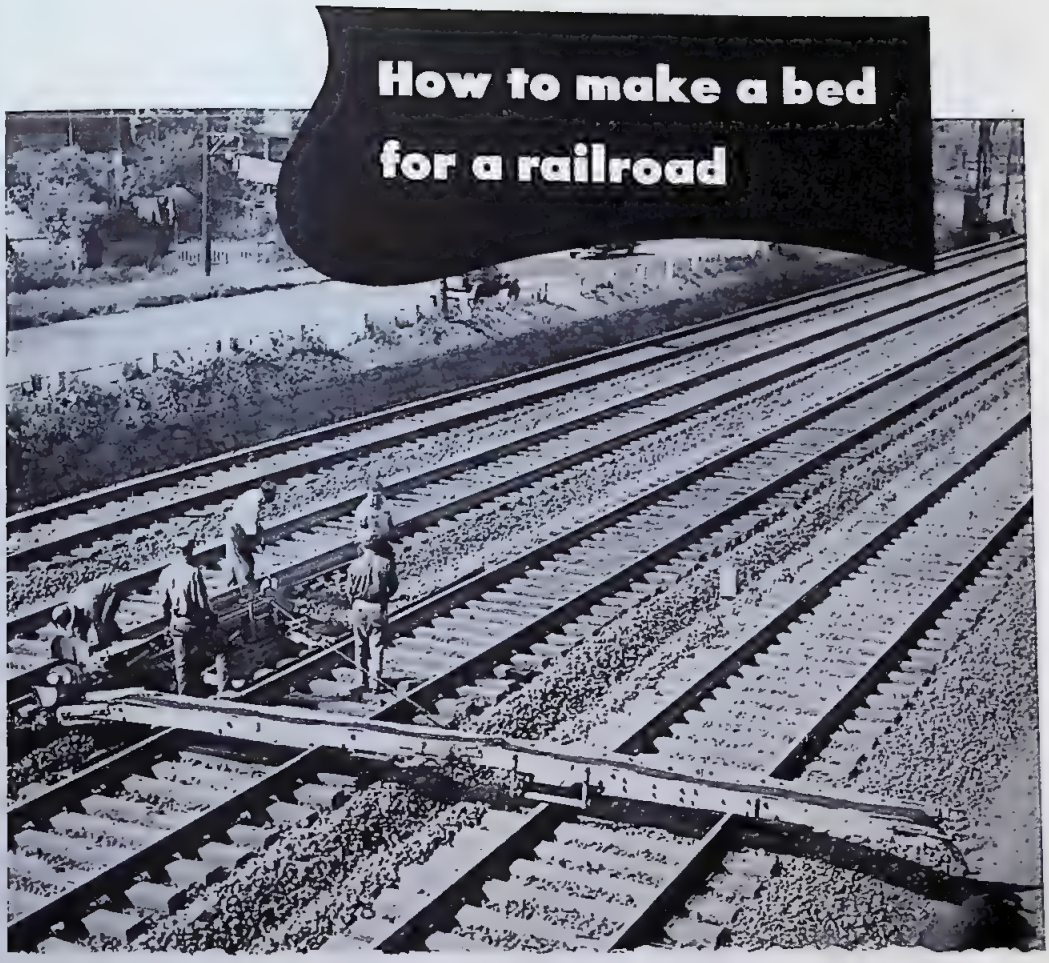
The more stately and appropriate memorial dedicated last August was the gift of Lucius Beebe and Charles M. Clegg of New York, authors of *Mixed Train Daily, a Book of Short Line Railroads,* published this fall by E. P. Dutton. Learning of the neglected state of the grave of the most famous man in railroading, they made arrangements with Casey's widow, Mrs. Jane Brady Jones, and a few days later the memorial was dedicated with ceremony.

The grave is situated but a few hundred yards from the Jackson branch of the Illinois Central Railroad, which employed Casey at the time of his death. A passing freight train whistled as it approached the grade crossing at the cemetery entrance, providing a perfect musical background for the occasion.

Present at the ceremonies was Sim Webb, Casey's fireman on his last epic "trip to the Holy Land." Sim jumped before Casey's engine plowed into the caboose of a freight train which had not fully gone into the siding at Vaughan, Miss. Casey was killed.

Also present were three generations of the Jones family: Casey's widow, his son Charles, and his grandaughter Barbara, who unveiled the monument. Charles works in the Jackson shops of the Illinois Central. Others who participated were the Rev. Joseph Cunningham, Beebe, Clegg, and Mayor George Smith of Jackson.

In his address of dedication, Beebe said, "In a calling and occupation which has given few names to the American lexicon, that of Casey Jones will be forever brightest and best known as synonymous with the daring and romance of the high iron in its golden age. He lived and died in the fullest flower of railroad expansion and in the age of steam. It is safe to say that the wonder and glory of that saga is now beginning to be obscured, diminished and cheapened by the devisings of modernity. There will be no songs written about, nor monuments raised to the memory of, any railroad man living or dying by the diesel locomotive."



YOU are looking at a "mechanical mole" regularly used to clean the ballast on the Erie roadbed.

This ingenious machine forces a cutting plate into the stone ballast to a depth of 8 inches or more. Up comes the fouled ballast and out goes the dirt and cinders to be deposited away from the track. Then clean stone goes back into place to give good support for ties and track.

A clean, strong roadbed means a smoother ride for passengers, less vibration and less shifting of freight. Continuous maintenance, plus specialized service for handling all types of freight, have given Erie a nation-wide reputation for safe, dependable transportation.

Whatever the commodity, marking it, "Ship via Erie" is assurance of its arrival in good condition.

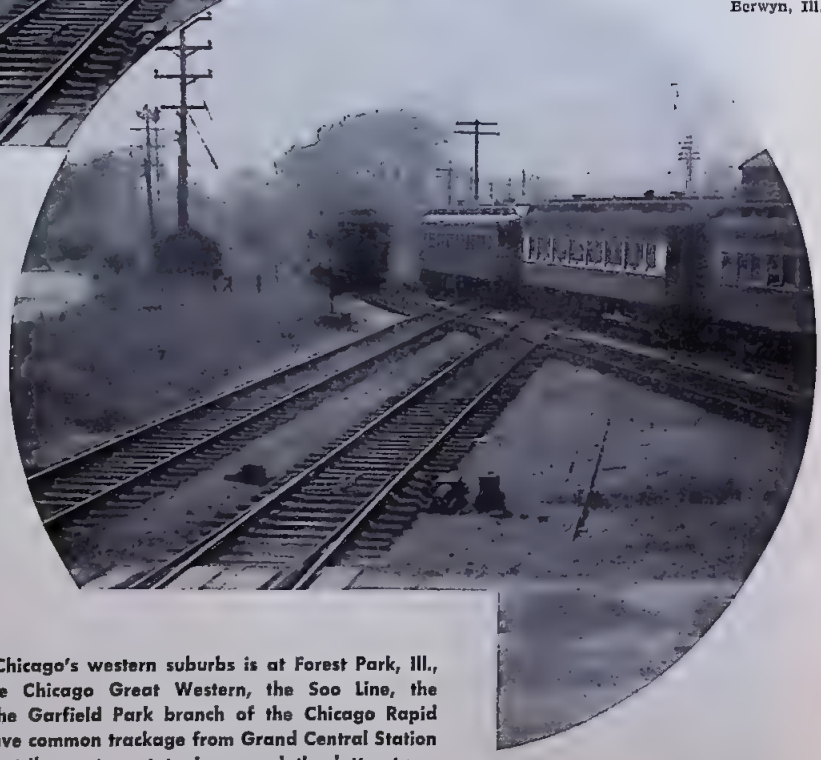
Erie Railroad

SERVING THE HEART OF INDUSTRIAL AMERICA

Chicago Great Western operates 1500 miles of line northwestward from Chicago to St. Paul and Minneapolis and southwestward to Omaha and Kansas City, serving Illinois, Iowa, Minnesota, Missouri, Nebraska, and Kansas. Agricultural products, including livestock, are of prime importance to this road, accounting for about 38 per cent of all its freight revenue.

Soo Line (Minneapolis, St. Paul & Sault Ste. Marie) extends from Sault Ste. Marie, Mich., on the east, to Whitetail, Mont., on the west, and from Winnipeg on the north to Chicago on the south, with a network of lines in between which bring the aggregate mileage to 3219. Manufactures and sundries are its most important revenue traffic; farm products are second.

Frank R. Valvoda, Berwyn, Ill.



Basically a commuter railroad, the Chicago, Aurora & Elgin nevertheless receives about a quarter of its revenue from other types of transportation. Electrically operated, it runs 103 miles of line between Chicago and its Fox River terminals.

Busy Junction

One of the busiest junctions in Chicago's western suburbs is at Forest Park, Ill., where four railroads meet: the Chicago Great Western, the Soo Line, the Chicago, Aurora & Elgin, and the Garfield Park branch of the Chicago Rapid Transit, the "L." CGW and Soo have common trackage from Grand Central Station to this point, where the former strikes out west to Iowa and the latter turns north toward Wisconsin. CA&E and the "L" use the same trackage from Chicago's Loop as far as Bellewood, where the "L" turns south to terminate at Westchester and the "Roarin' Elgin" continues on to the west. An eastbound CGW freight↖ approaches the junction. Soo Line tracks branch off to right beyond the crossing. After a long train such as this has passed, bunched-up CA&E and "L" trains↗ keep the diamonds rattling for many minutes. Both the Rapid Transit and the interurban line operate on tight schedules, and the crossing is normally signaled clear for their three-rail tracks, the steam-road semaphores being raised only on the approach of a train. CGW and Soo do not operate suburban trains.

Chicago Rapid Transit, exclusively a passenger line with 168 miles of elevated tracks, also operates underground in the new Chicago subway as well as on the surface to suburbs north and west of Chicago. It serves about four million population.

Classification Signals Discontinued

Recognizing that classification signals are useful only when trains are operated on their rights — first-class superior to second-class, etc. — some railroads have discontinued the use of flags or lights to identify trains with extra sections or as extras. Pennsylvania and New York Central use such signals only on single track.

On the Pennsylvania main line between New York and Washington, for instance, trains are governed solely by signal indication. If the dispatcher wants to run a freight extra on the time of a passenger train, he merely displays a proceed signal for the train involved. If train superiority were being observed in such a case the freight train could not occupy the main track on the time of a superior train, except by train order. Traffic on this line is so heavy that issuing train orders would be impracticable.

On Pennsylvania single track, only the first section of a regular train is operated as a first-class train; all other sections are operated as extras. Identification of trains, whether regular or extra, is effected by use of the engine numbers. Where passenger trains are operated on single track they are protected by some form of block system. If an error occurred in the handling of trains by timetable rights and train order, the block system would prevent an accident. As a further precaution on single track, all meets of opposing trains are covered by positive meet orders.

New York Central abolished the use of classification signals on multiple track about 15 years ago. Where still used, the Central has substituted lights for flags.

Bernard L. Kobel Photo Service, Frankfort, Ind.

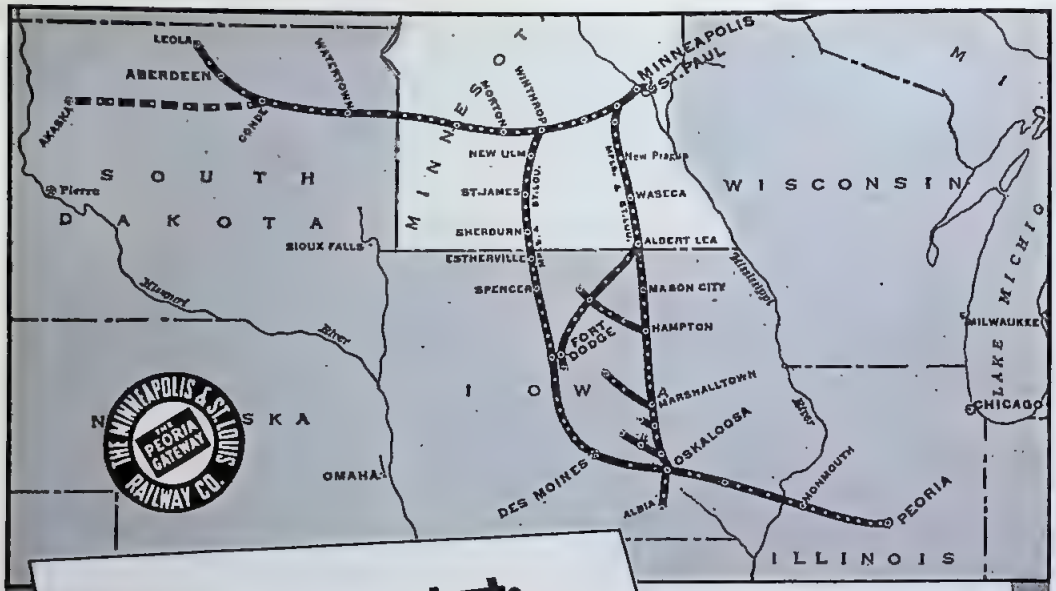
This "photograph car" of Hutchings & Krum was an antidote for slackening business in the early 1900's. It was a studio on wheels, complete with darkroom, skylight and furnishings. The photographers would set up business on a siding in some town and remain there as long as patronage was good. Then they would move on. They worked mostly in Kansas.

Jesse James Holds Up a Train

Quite different from the holdups of trains by the notorious Jesse James of Wild West days was the "holdup" by James' unrelated namesake last winter. The present-day Jesse James is a Grand Trunk Western crossing watchman at Mishawaka, Ind. A snowplow became wedged in the crossing shortly before the eastbound *Maple Leaf* was due. James telephoned the dispatcher at South Bend to hold the train there until the plow could be removed from the tracks, but the *Maple Leaf* had already left. So 71-year-old Jesse James ran to a switch and opened it, causing a block signal to display red. He averted a wreck by "holding up" the train.

Bert Pennypacker, Box 341, Coatesville, Pa.

Locomotive D of the Pennsylvania Power & Light Company sports fancy trimmings not frequently seen on industrial locomotives. To conserve steam, this fireless locomotive uses an air horn mounted on its sleek, streamlined "boiler," which is not a boiler at all, but an insulated storage tank into which high-pressure steam and hot water are pumped at intervals from a stationary boiler. As the steam is used up the hot water gradually evaporates. When the tank pressure drops to the working pressure the locomotive must be recharged.



Transportation

FOR *Minnesota*

In Minnesota, the richest agricultural and industrial sections are served by the Minneapolis & St. Louis Railway.

Minnesota in 1946 ranked first in production of butter and flax seed; second in oats, third in corn and fourth in spring wheat. As always, Minnesota was near the top in cattle, hogs and poultry and mined three-fourths of America's iron ore.

On the solid foundation of these and other sources of wealth, Minnesota is building a mighty industrial empire and offers unexcelled advantages to manufacturers and distributors in many lines.

The M. & St. L., a modern, efficient freight carrier, provides constantly improved transportation service for Minnesota industry, as it has, during three-quarters of a century, for Minnesota agriculture.

TRAFFIC OFFICES IN 36 KEY CITIES • LINKED WITH TELETYPEWRITER SERVICE

The Minneapolis & St. Louis Railway

One of Chicago's Busiest Crossings

This is Twenty-first Street crossing in Chicago. The multiple tracks of the Chicago & Western Indiana run from left to right, cross the two-track line of the Pennsylvania in the center of the photo, and then turn south. Gulf Mobile & Ohio (Alton) trains run on the tracks at the extreme right. The Santa Fe switcher in the background is on two tracks which leave the C&WI right of way at the crossing and bear southwest. Illinois Central also runs over these. All trains using Dearborn Station and Pennsylvania trains to and from Union Station operate over this intersection. At the extreme left background is an interchange track. Photo by Linn H. Westcott.

To serve you in the best ways possible is a proposition to which the Norfolk and Western vigorously dedicates itself. That is why we are constantly mindful of the *little* things that go into better railroading . . . the symbolic spikes and ties and lights . . . the "shoeing of the iron horses" and other techniques that bid for perfection . . . the couplers . . . the signals . . . the springs . . . the humble things that are seldom noticed by the public, yet are vitally important to Precision Transportation. The *To Serve You* ads are our way of telling you that on the Norfolk and Western the apparently unimportant things are extremely important . . . *To Serve You.*

Norfolk and Western RAILWAY

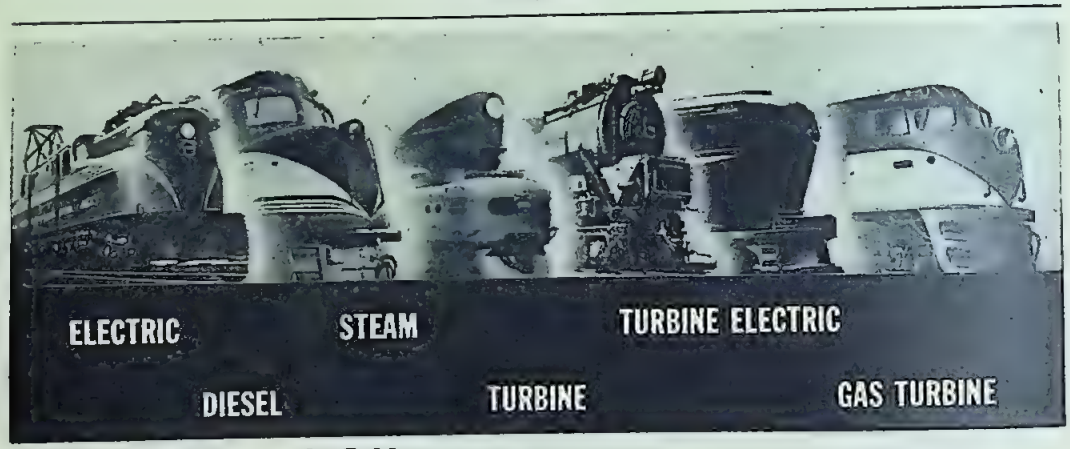
PRECISION TRANSPORTATION

DON'T LIMIT OPERATIONS

EFFICIENT operating personnel are limited by the equipment with which they work . . . and only modern power can successfully meet today's freight demands.

Give your personnel adequate equipment . . . up-to-date equipment such as the modern Lima-built steam locomotives being used so successfully on the Richmond, Fredericksburg & Potomac in high-speed freight service.

LIMA LOCOMOTIVE WORKS INCORPORATED, LIMA, OHIO



ALL OPERATE ON

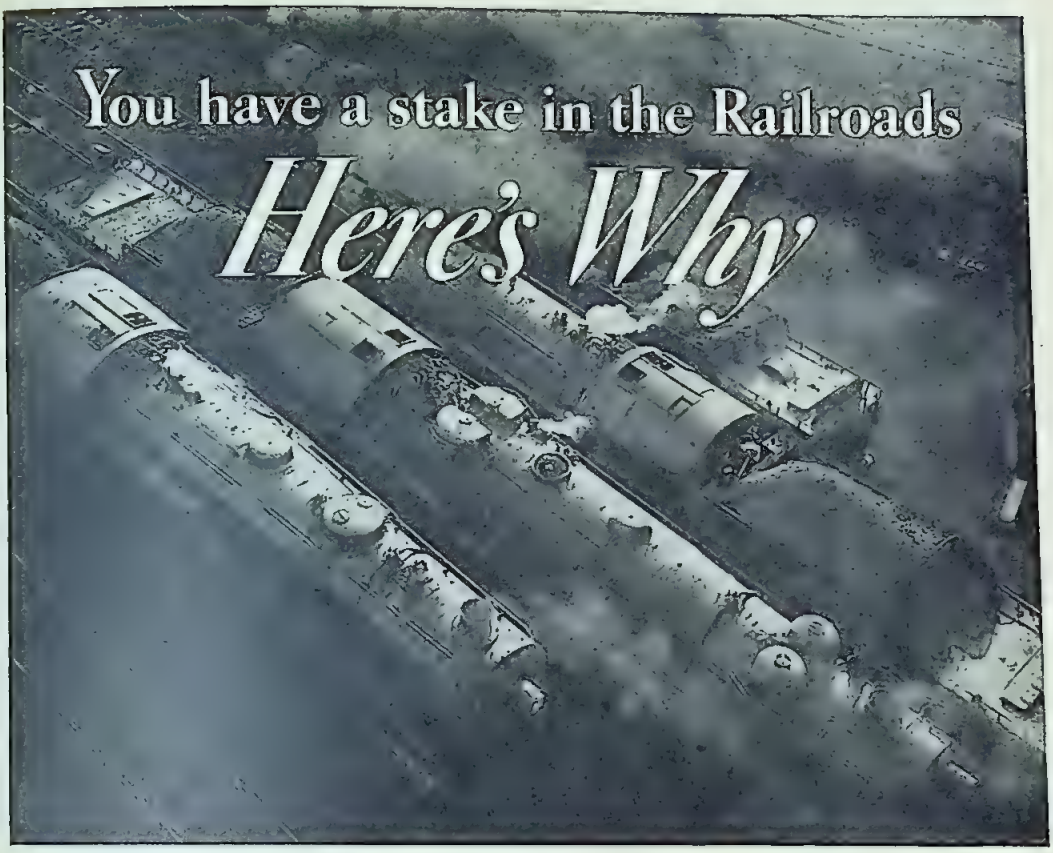
TIMKEN ROLLER BEARINGS

TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
RAILWAY ROLLER BEARINGS

Timken Roller Bearings make all types of modern motive power perform more efficiently; increase their availability; reduce operating and maintenance costs.

Sixteen years ago the Timken locomotive demonstrated conclusively the value of roller bearings for motive power; since that time a constant swing to Timken Bearings for all types of locomotives has been in progress.

Today there is hardly a new locomotive of any type built that does not have roller bearings. The railroads know it pays—and so do the locomotive builders. The Timken Roller Bearing Company, Canton 6, Ohio.



Even if you never ride on a train—never ship a package by railroad freight—the whole pattern of your daily life is interwoven with the railroads. Most of the food you eat is carried to market by rail. And railroads—as the nation's major carriers of raw materials and finished products — have a part in the production of practically everything you use.

So it's important that the railroads continue to improve the service upon which you depend —service at the lowest cost for comparable transportation in the world.

To keep on doing that, railroads need new engines, new cars, new rail, new equipment and facilities of all sorts. And these improvements depend on adequate railroad earnings.

"And what," you ask, "is an adequate return?"

Most people think 6 per cent would be no more than fair.

Yet during the past 25 years—and that includes the war years—the railroads averaged a return on their net investment of only 3⅓%.

And in 1947, with a record-breaking peacetime traffic—railroads are expected to earn less. Such a return is only about half what the railroads need to keep on providing you with the kind of equipment and service you want.

This need for adequate railroad earnings directly concerns you, and every other American. So the railroads want you to know the facts.

Send for a free copy of the new booklet "You and Your Railroads." Association of American Railroads, Room 977, Transportation Building, Washington 6, D. C.

American Railroads

THE NATION'S BASIC TRANSPORTATION

RUNNING EXTRA

W. A. Akin Jr. is the fellow whose maps have been gracing the pages of recent issues. There's more to making a map than you might think. Take the map of the Reading system Bill made for our August issue, for instance. Bill spent about 80 hours in making it. Not only did he ink in all railroad lines, rivers and lakes, using government topographic maps as a base and others as references; he also compiled a list of physical features, railroads, cities and towns, typed them out for the compositors, and later patiently pasted all the lettering down on the map. This map "float list," as the lettering is called, is set in type and printed on gummed paper to make the pasting easier, but even so it's a job.

After a map is completed, Bill edits it. How do you edit a map? You check every city and town to make sure they're in the right place; you check the spelling, which is harder than it sounds, for there may be two or more different ways of spelling the name of a city or town or geographical feature. For instance, the Duluth, Missabe & Iron Range Railroad serves the mining town of Mesaba in the Mesabi Range.

As art editor, Bill also makes page layouts for the magazine and helps in the selection of photographs. He's quite a photographer himself, and when his daughter Sharon Sue was born August 15, Bill took her picture at the age of exactly 4½ minutes, just after her first bath↓.

Railway

Open-Platform Observation Cars

May I rise in meeting to take polite issue with Philip Korst when he says cinders and high speeds are behind the disappearance of open-platform observation cars? The truth is that railroad officials are too shiftless and incompetent to be bothered with the looks of their trains, are too mean to pay for the trivial extra upkeep of brass, and want to sell seat space which was formerly for free for the pleasure of passengers. Railroads simply don't care what their trains look like, and if they can find a way of punishing the demon passenger (and I have never yet encountered a passenger who didn't resent the loss of open platforms) and at the same time jam in another cash fare, they'll do it every time.

Lucius Beebe, New York *Herald Tribune*, New York, N. Y.

Most of the Pennsylvania's Atlantic City expresses carry open-platform observation cars as parlor cars. These are usually 10-section Pullmans, and — in true Pennsy fashion — are carried indiscriminately at any position in the train. On one particularly heavy evening I saw four of these beautiful cars tied onto a New York-bound express. Despite the fact that they were obviously not *all* on the end of the train, all had their platforms amply filled with overheated passengers.

Arthur F. Knauer, Fairview Ave., Colonia, N. J.

Correction: The *Alouette* still uses these cars, although I don't remember seeing tail signs. I recently saw her leaving Woodsville, N. H. (on the B&M), and she had one of the buffet parlor cars on her tail. . . . CP's *Red Wing* carries an open-end observation car, but this is sometimes buried in front of an extra Pullman or two.

D. M. Rice, 149 Oakland St., Springfield 8, Mass.

Pennsylvania S-2 Is Not the First Turbine

I note with some surprise that in Charles Kerr Jr.'s article, "The Steam Turbine: Coal's New Hope" [June TRAINS], the author conveys the impression throughout that the new Pennsylvania 6-8-6 is the first locomotive of its kind. . . . A turbine locomotive with electric transmission was built in Scotland as far back as 1909; the first successful turbine engine, however, was built in Sweden in 1922.

RAILROAD MAN OF THE MONTH

If you ever ride over the Big Sandy Division of the Chesapeake & Ohio in eastern Kentucky, pay particular attention to the riding qualities of the track near Richardson, 49 miles south of Ashland. You'll be gliding over the pride of the Paintsville District.

John Vanhoose is the man in charge of track maintenance in this section. For 25 years he has been section foreman, and in that time his section has won 15 first prizes and two second prizes for the best track in the 72-mile district. The district includes 12 six-mile sections.

Vanhoose is a tall, taciturn man. His eyes are paled and his skin is tanned by the sun under which he has been working on the tracks since 1904. He was promoted to section boss in 1913 and to section foreman in 1922. Now he's 63 years old, but is still one of C&O's most energetic employees.

While setting records for having the best-kept track, Vanhoose also set another record. There have been no personal injuries on his section for 14 consecutive years.

Post Office

Several locomotives were built to a similar design for the German Railways. All these designs had cumbersome condensing apparatus. The first noncondensing type was built in 1933, again in Sweden. Following these engines came the LMS Pacific No. 6202 in England in 1935. It was designed for comparative trials with standard reciprocating engines of approximately the same power: Pacifics No. 6200, 6201, 6203-6212 of the Princess Royal class. No. 6202 has worked regularly between London and Liverpool.

S. O. Swellnham, Elm House, Lorne Rd., Waterloo, Liverpool 22, England.

We Blush

Your reply to Mr. Jenkins (page 67, May TRAINS) is not in accordance with the facts, for notwithstanding that we have advertised this service extensively and have made every effort to get this particular operation on a paying basis, we have not developed the several hundred passengers mentioned in your reply and the train is not operating on what I would consider a profitable basis.

R. F. Johnston, General Passenger Agent, The Milwaukee Road, Chicago, Ill.

[In our reply to a letter from H. E. Jenkins we said: "The Milwaukee Road recently inaugurated a Sunday evening round-trip train from Milwaukee to Berlin, Wis., and by intelligent and dilligent advertising built up its patronage to several hundred passengers within two months. Daily-except-Sunday trains had been run previously, handling mail as well as passengers. Without mail on Sunday, it was deemed unprofitable to operate a Sunday train — until it was tried." We are sorry to learn that appearances are deceiving and local advice not always reliable. — *Ed.*]

So on page 32 of the August issue Southern Railway's No. 1208 is a Pacific but on page 33 No. 1222 is a 2-6-4. Tsk!

R. C. Fullerton, 3601 W. Washington Blvd., Los Angeles 16, Calif.

The extension of the Rockhouse Creek branch from Duo to Deane, Ky., could not be a project of the Norfolk & Western, as stated in the August news, for N&W does not serve Duo. It could be Louisville & Nashville.

R. R. Horner, N&W Magazine and Advertising Dept., Roanoke, Va.

[It *is* L&N instead of N&W. Thanks, Mr. Horner. — *Ed.*]

Remembers Fremont, Elkhorn & Missouri Valley RR.

I showed my 77-year-old father the photograph of Blacktail Gulch in the Black Hills which you printed in your May issue. He not only remembered the place — he used to fire for the Fremont, Elkhorn & Missouri Valley — but said that he had fired engine 225 many times.

Carl W. Davey, 4119 Ellis Ave., Chicago, Ill.

Section Foreman John Vanhoose . . . Worker Father of the Year

When not working on the railroad, Vanhoose tends a garden and raises 700-pound hogs on his farm, which borders on the right of way. The farm has provided bountifully for his family of 19 children, 15 of whom are living.

Vanhoose's work record and the size of his family earned him the title "Worker Father of the Year" last June, when he was selected by the National Father's Day Committee in New York as the outstanding worker father in the country. In recognition of his selection, C&O officials arranged for Vanhoose and his wife, Ella, to be the railroad's guests in New York for the week preceding Father's Day. The couple stayed in the Biltmore Hotel and saw the city from an automobile placed at their disposal.

Two of Vanhoose's sons — Eugene, 38, and Hubert, 23 — also work for the C&O. Eugene is relief foreman on his father's section and Hubert is a carpenter.

SECOND SECTION

It's not often that TRAINS' editors turn the magazine's files to their own use, but the other day the entire staff enjoyed a brief entertainment by doing just that thing. An acquaintance dropped into the office and asked for assistance in planning a week-end trip to Ripon.

"Why don't you take the Milwaukee Western?" asked one editor, with a quick flick of an eyelid at the others. "It's the most direct route and it runs through some beautiful country."

The visitor was interested. "How are the schedules?" he asked.

The editor went to the files and dug out a four-color map and a timetable.

"You can get a car at any of the interurban stops downtown," he said. "A car leaves the terminal at 7:50 a. m."

The visitor was enthused. "Where can I buy a ticket in advance?" he asked.

That did it. The editor then had to admit that it was all a hoax; that the Milwaukee Western had been projected in 1909 and that maps and timetables had been printed to help sell stock, but that not a single length of track had ever been laid.

* * *

Among the numerous 1947 entries in our visitors' registration book are names from 21 states, the District of Columbia, and Sweden. We're always glad to have out-of-town visitors, and invite you to stop in and see us the next time you're in Milwaukee. Just ask for Joe O'Hearn, assistant to the publisher. He's our official greeter.

* * *

This is the first issue of TRAINS to be bound on our new Christensen chain stitcher — a machine which assembles the magazines and then puts the staples smack in the middle of the center-spread picture. The machine replaces a similar one which has seen better days. It has seven "stations" instead of the old machine's five. A girl sits at each "station" and feeds one 16-page section of the magazine into the machine. As the first section travels along the conveyor to the second station, the second girl adds the second section, and so on until the complete magazine reaches the stapling mechanism. In its early days, TRAINS was assembled and bound by hand.

* * *

Be sure to read our full-page advertisements elsewhere in this issue of Trains. They'll tell you about the big November issue and about some new books you can get from us. Among the new books is Lucius Beebe's "Mixed Train Daily, a Book of Short Line Railroads," which you can own for $12.75.

KALMBACH PUBLISHING CO.

1027 N. 7th St., Milwaukee 3, Wis.

Burlington Route.

What has become of the Pioneer Zephyr? Here she is, still clicking off a 456-mile daily round trip between McCook and Lincoln, Neb. The Zephyr was the first diesel streamlined train. It entered regular service between Lincoln, Omaha and Kansas City in 1934 after making a record-breaking nonstop run of 1015 miles in 13 hours 5 minutes. At that time the articulated train consisted only of a motor-baggage-mail unit and two coaches. Today it has one more coach and has covered more than 2 million miles. In 13 years since the first Zephyr, the Burlington has dieselized all mainline passenger trains.

How to Figure Steam Horsepower

The horsepower of modern steam locomotives can be figured with a fair degree of accuracy. Horsepower depends upon boiler capacity, and boiler capacity depends upon grate area. Horsepower also depends upon the burning qualities of the fuel which is used, and upon the skill of the fireman. These variables upset the calculations somewhat.

However, for a rough estimate of a modern steam locomotive's horsepower, multiply the grate area (in square feet) by 50. The answer will give you the approximate horsepower of the loco.

Truman a Railroad Man

President Harry S. Truman once worked on a railroad. He was a timekeeper during the construction of the Santa Fe about 1902. Presidents James Buchanan and Abraham Lincoln also had railroad background. Buchanan was president of the Harrisburg, Portsmouth, Mount Joy & Lancaster in the 1830's. Lincoln was attorney for the Illinois Central and Rock Island. Buchanan's road is now part of the Pennsylvania main line.

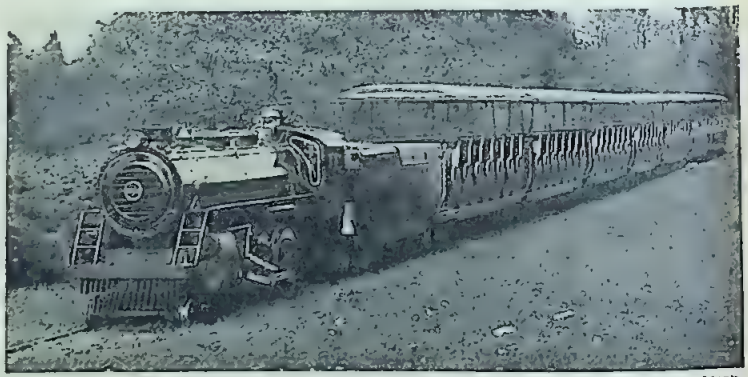
Detroit Zoo Runs a Railroad

One of the interesting features of the Detroit Zoological Park is the Zoo Railroad. This double-track narrow-gauge line extends from one end of the park to the other, with a loop at each end. The track is splendidly constructed and well maintained.

Each of the three trains consists of a locomotive and several open cars. A car can seat about 14 adults and an equal number of children. Sometimes one locomotive pulls seven cars. Engines are operated by gasoline motors, but to all appearances (except for steam and smoke) they are handsome Pacific locomotives.

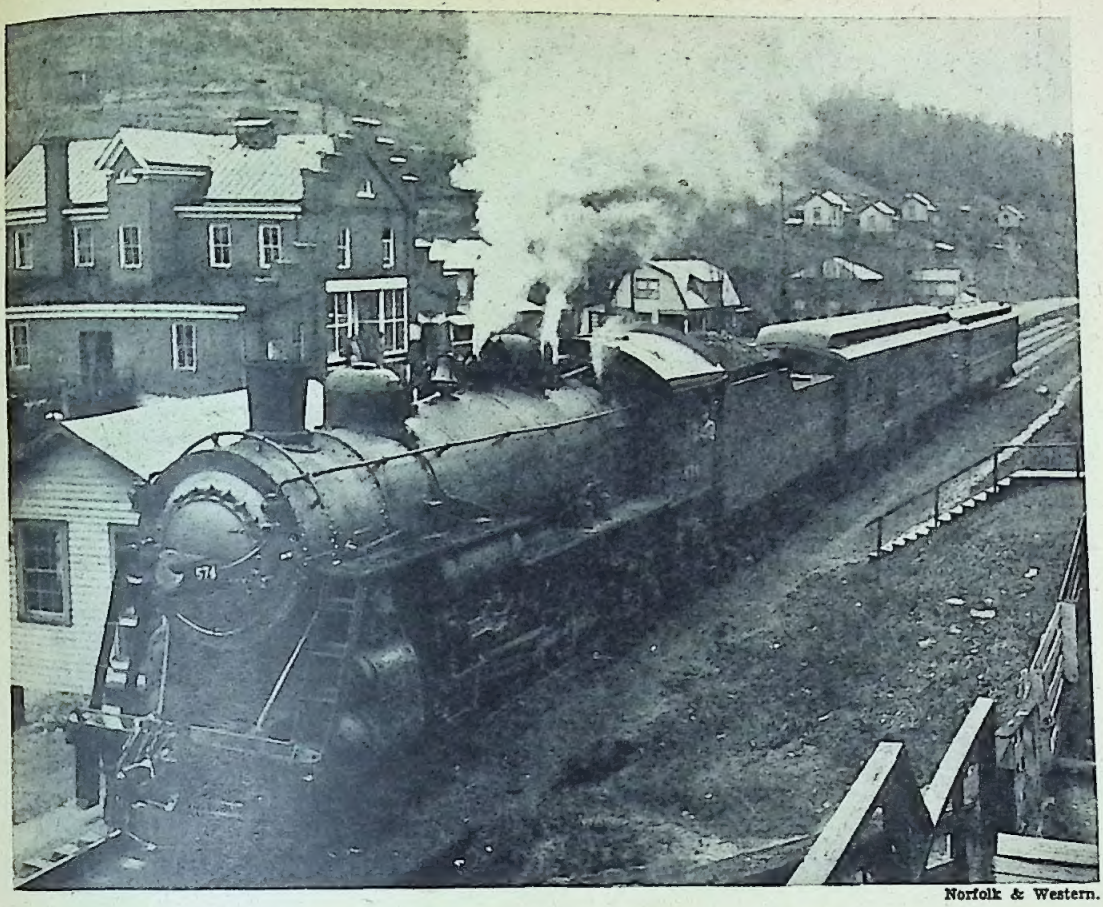
The Zoo Railroad is a paying proposition. Not only does it pay all its own operating expenses, but it shows a profit. Profits are used to buy more animals.

It is a lot of fun to ride this little railroad. Board the train just inside the zoo entrance in suburban Royal Oak. It will take you past the picnic grounds, through a tunnel, around some curves, and let you off at the North American or African station at the west end of the park — and all for 5 cents. Some visitors walk back, but others cannot resist another train ride. — *Clarence J. Root.*



John A. Murphy, Highland Park, Detroit, Mich.

This gasoline-powered Pacific hauls passengers in the Detroit Zoological Park.



Norfolk & Western.

One Locomotive + 2 Cars = 18 Trains

Take one locomotive, two cars, four trainmen, and one set of markers, and what have you got?

Eighteen trains, according to the way the Norfolk & Western figures it on 28 miles of branch lines on the Pocahontas Division in Virginia.

These 18 trains run 98 miles every day, exploring every nook and cranny of the "main branch line" and five "branch branch lines" which serve the mining communities of Pocahontas, Boissevain, Goodwill, McComas, Widemouth, and more than a dozen others. Turntables are nonexistent at the ends of the branches, so the single train with the many numbers backs up 36 miles every day.

When Norfolk & Western's Pacific No. 574↑ and its two cars begin a day's work, the combination is known as train 17 on the Bluestone branch↗. It keeps this number for five minutes, then becomes train 20 for a backward trip to Bluestone. During the day it also runs on the Goodwill branch↗ and the Crane Creek branch→. All trains shown in these three tables are the same one.

Table 6—BLUESTONE BRANCH.

36	34	51	47	22	20	Mls.	*June* 16, 1946.	17	19	48	21	60	35
....	P M	.....	.....	A M	....	....	(*Eastern time.*)	....	A M	.....	.....	P M	....
P M	*343	A M	....	*918	A M	0	lv. **Boissevain** ar.	A M	9 18	.....	A M	3 43	P M
*854	3 58	*1030	....	9 29	*700	3.9	+ . Pocahontas . .	7 00	9 05	.....	10 30	3 33	8 54
8 59	4 03	10 35	A M	9 34	7 05	5.4	ar. **Bluestone** lv.	*655	*900	A M	*1025	3 28	*849
P M	P M	10 45	*934	A M	A M	5.4	lv. **Bluestone** ar.	A M	A M	9 59	A M	3 28	P M
....	....	f1050	f938	....	....	6.8	.....Cooper.....	....	....	f9 54	.....	f323	....
....	....	10 54	943	....	....	8.0	....Bramwell....	....	....	9 49	.....	3 19	....
....	....	10 57	946	....	....	8.6	....Simmons....	....	....	*946	.....	3 17	....
....	....	11 10	A M	....	....	12.9	ar. **Flipping** .lv.	....	....	A M	.....	3 06	....
....	....	11 30	....	....	....	12.9	lv. **Flipping** .ar.	....	....	.....	...	3 06	....
....	....	11 35	....	....	....	14.0	ar. **Montcalm** .lv.	....	....	.....	.....	3 02	....
....	....	12 15	....	....	....	14.0	lv. **Montcalm** .ar.	....	....	.....	.....	2 24	....
....	....	12 25	....	....	....	16.6	.....Rock.....	....	....	.....	.....	2 16	....
....	....	12 40	....	....	....	21.2	....Matoaka	....	....	.....	...	2 01	....
....	....	12 45	....	....	....	22.2	.....Giatto.....	....	....	.....	.....	1 56	....
....	....	12 55	....	....	....	24.9	.. Widemouth ..	....	....	.....	.....		....
....	....	f1 07	....	....	....	23.4	... Smokeless ...	....	....	.....	.....	f149	....
....	....	1 12	....	....	....	24.1	... Hiawatha ...	....	....	.....	.....	1 46	....
....	....	1 17	....	....	....	25.4	... Springton ...	....	....	.....	.....	1 40	....
....	....	1 35	....	....	....	26.6	...**Wenonah** ...	....	....	.....	.....	*136	....
....	....	P M	.....	.....	.....	.....	ARRIVE] [LEAVE	.....	.....	.....	.....	P M	....

Table 6a—GOODWILL BRANCH.

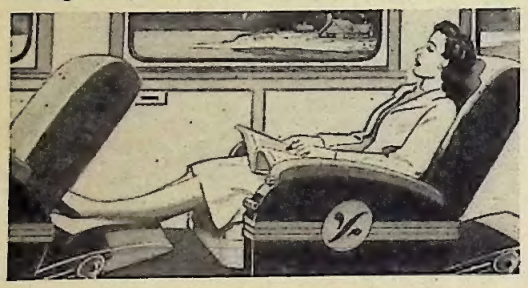
		No. 129	Mls.	*June* 16, 1946.	No. 130		
.....	.....	.....	....	(*Eastern time.*)	.....	.....	.....
.....	.....	*1110 A M	0	lve.....**Flipping**....arr.	11 30 A M	.....	.....
.....	.....	11 12 »	0.3	.....Duhring.....	11 28 »	.....	.....
.....	.....	11 20 A M	2.1	arr....**Goodwill**....lve.	*1120 A M	.....	.....

Table 23—CRANE CREEK BRANCH.

....	.....	133	131	Mls	*June* 16, 1946.	132	134	.....	.....	.....
....	.....	P M	A M	..	(*Eastern time.*)	P M	P M	.....	.....	.....
....	.....	*2 24	*1135	0	lve...**Montcalm** ..arr.	12 15	3 02	.....	.....	.....
....	.....	2 32	11 45	2.4	..... Crystal	12 05	2 52	.....	.....	.....
....	.....	2 42	11 53	4.2	...**McComas, W.Va**...	*155	*242	.....	.....	.....
....	.....	P M	A M	....	ARRIVE] [LEAVE	A M	P M	.....	.....	.....

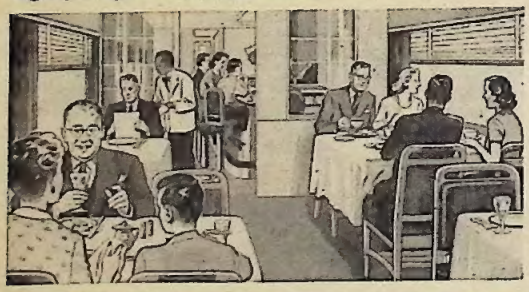
THE NAME'S FAMILIAR—BUT OH, HOW SHE'S CHANGED!

She's still called the North Coast Limited. But just about everything else is new and streamlined and glamorous—the Day-Nite coaches, buffet-lounge cars, diner-lunch cars . . . the smooth, swift diesel locomotive out front. And this winter, exciting new sleeping cars—providing greater comfort and privacy—will join the North Coast Limited in its Chicago-North Pacific Coast run!



New day-night coaches are here. Lowest fare; yet your Northern Pacific coach ticket buys many refinements: extra leg room, reclining seat with leg rests, air-conditioning, individual reading light, ample dressing room.

New buffet-lounge cars are here. This new N. P. beauty is a "club car" expressly for coach and tourist car passengers! Lounge chairs and settees. Snack bar. Writing desk. Wide "picture" windows. Good company!



New diner-lunch cars are here. These smart new cars offer you a choice between tempting snacks and sandwiches at the counter . . . and Northern Pacific's famous, full-course meals served at the table.

New roomettes are coming. Your own private room—with ice water tap, draftless tempered air, toilet, lavatory, a big bed that's always ready. Also coming: Newest yet—duplex-roomettes and luxurious bedrooms.

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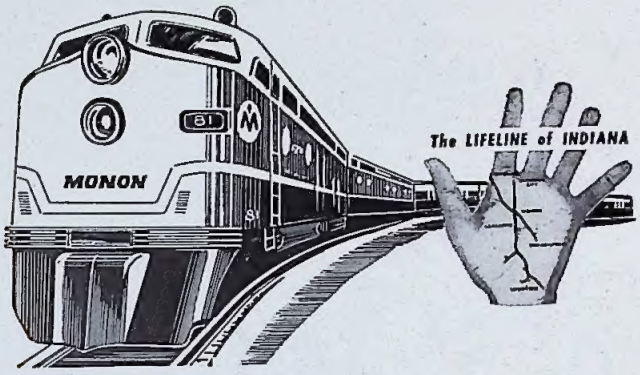
1847 *A Century of Service at the Crossroads of America* 1947



The New HOOSIER

Heralds the Monon of Tomorrow

Now comes another thrilling revelation of MONON's modernization plans. This new passenger train is luxury on wheels! Powered by modern diesel electric locomotives, it moves over the rails with a velvety smoothness that completely masks its speed. So comfortable, so relaxing, so fully enjoyable that the trip seems even shorter than the brief three and three-quarter hours it requires.

Among the new features offered by the new Hoosier are:—Modern reclining-seat coaches • Observation parlor car • Dining bar, lounge car • Complete air-conditioning.

The new HOOSIER—a preview of the Monon of Tomorrow—is now a regular daily feature of MONON service between Chicago and Indianapolis. It is practical evidence that the Monon's plans to be "the most completely modernized railroad of its size in America" *—are being realized.*

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Two New Books in TRAINS Albums of Railroad Photos

These two albums are available now at your hobby store or direct from us

No. 17, Locomotives of the Pennsylvania Railroad

The locomotives of the Pennsylvania Railroad are more highly standardized and more distinctive in appearance than those of any other large American railroad. The 13½-inch builders' photographs in this album display the details which distinguish Pennsylvania motive power, and with each photo are the principal dimensions of the locos. The list includes the classes T-1, S-1, S-2, C-1, Q-1, Q-2, M-1, E-6, K-4, K-5, L-1, GG-1, P-5a, and other standard designs now in service — as well as several pages of rare old-timers.

No. 19, Circus Trains

This album tells a picture story of the transportation of the circus by trains. It shows the entire procedure by which a circus with its 16,000 people and seemingly endless paraphernalia is unpacked from a railroad train and set up for use in just a few hours. The photos include many fine views of the colorful passenger cars and specially constructed flat and stock cars. One 28-inch fold-in page shows a panorama of the 15-acre city of canvas and part of the 100-car train traveling in four sections.

These albums, like their 16 predecessors, are printed with special glossy ink on one side of highly coated paper. The pages are 14" x 10", bound with colorful plastic Cerlox, and can be removed for framing purposes without damaging the remainder of the album. A factual foreword introduces the reader to the photo story which follows.

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